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WWCR: America's Voice Of The People



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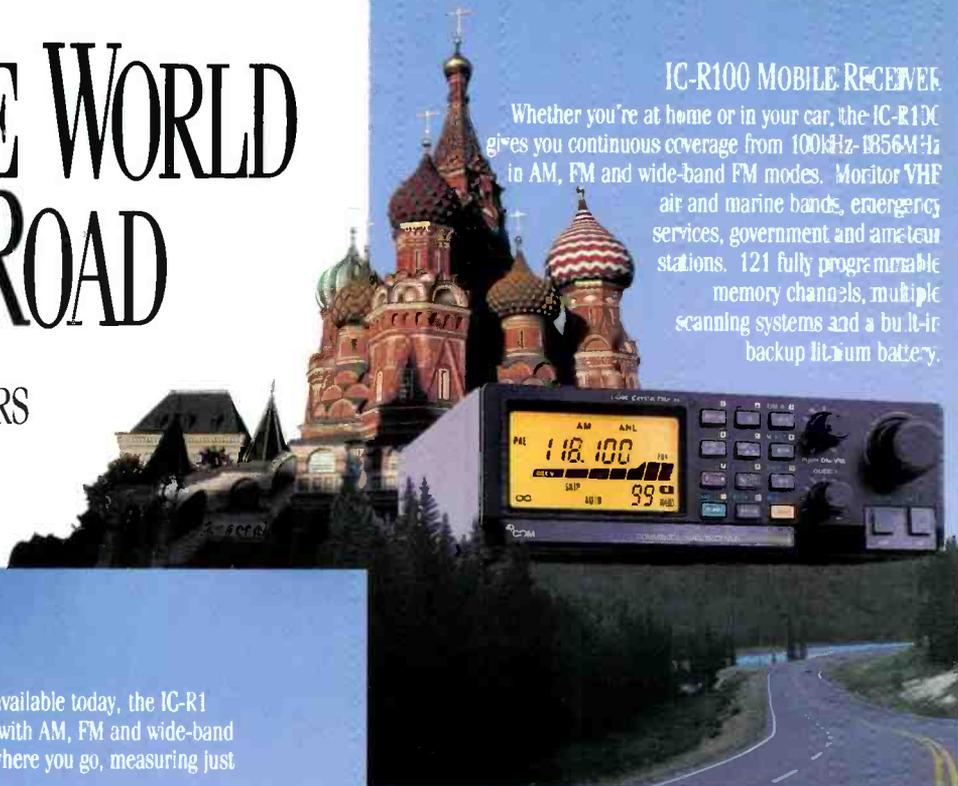
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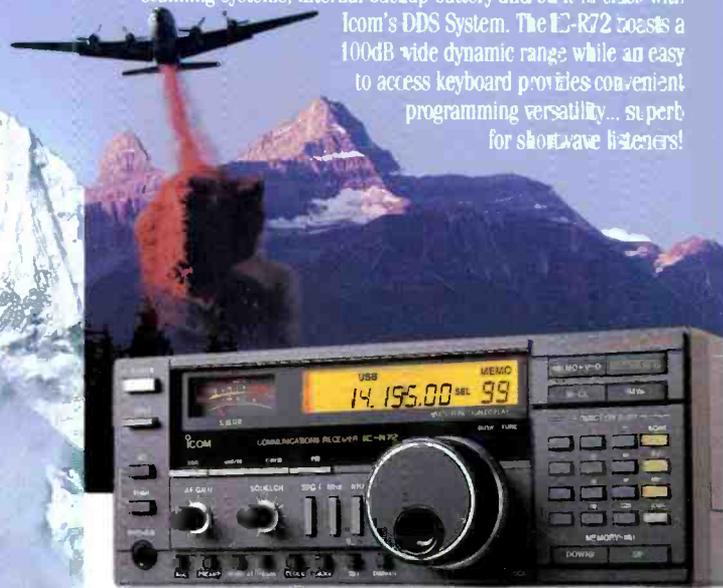
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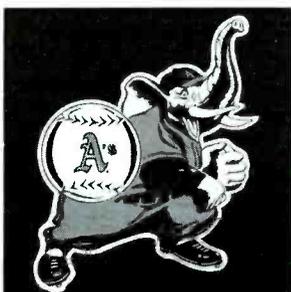
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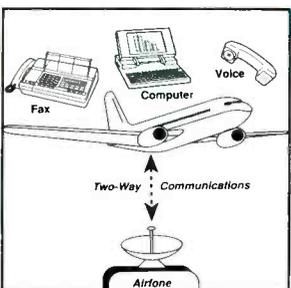
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This month's cover: Joseph Brashier, National Program Director of SW radio station WWCR in Nashville, TN, does on the air programming. Photo by Larry Mulvehill.

EDITORIAL STAFF

Tom Kneitel, K2AES/KNY2AB, Editor
Jeanine M. O'Connor, Associate Editor

CONTRIBUTING EDITORS

Gerry L. Dexter, Shortwave Broadcast
Robert Margolis, RTTY Monitoring
Gordon West, WB6NOA, Emergency
Don Schimmel, Utility Communications
Edward Teach, Alternative Radio
Harold A. Ort, Jr., Military Consultant
Janice Lee, Radar Detectors
Chuck Gysi, N2DUP, Scanners
Roger Sterckx, AM/FM Broadcasts
Harry Helms, AA6FW, Thoughts and Ideas
Donald Dickerson, N9CUE, Satellites
Kirk Kleinschmidt, NT0Z, Amateur Radio

BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher
Donald R. Allen, N9ALK, Advertising Mgr.
Emily Kreutz, Sales Assistant
Dorothy Kehrwieler, General Manager
Frank V. Fuzia, Controller
Catherine Ross, Circulation Director
Melissa Kehrwieler, Data Processing
Carol Minervini, Data Processing
Denise Pyne, Customer Service

PRODUCTION STAFF

Elizabeth Ryan, Art Director
Barbara Terzo, Assistant Art Director
Susan Reale, Artist
Dorothy Kehrwieler, Production Manager
Emily Kreutz, Production
Pat Le Blanc, Phototypographer
Florence V. Martin, Phototypographer
Hal Keith, Technical Illustrator
Larry Mulvehill, WB2ZPI, Photographer

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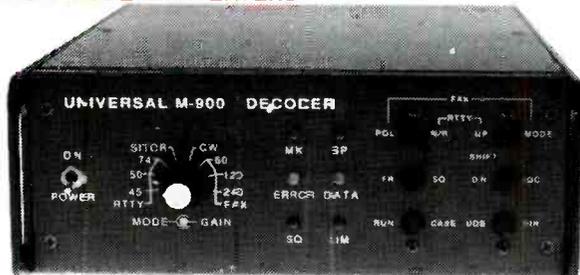


The Universal M-7000 will permit you to intercept and decode Morse code, various forms of RTTY, FDM and FAX. Simple connections to your receiver and video monitor will enable you to monitor with the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing. Requires 115/230 AC 50/60 Hz. With video fax and real time clock only \$1159.00 Please write for full details.

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MULTI-MODE CONVERTERS

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Here is a compact, easy to use decoder that copies all the most important shortwave transmission modes. The M-900 covers Morse code for monitoring hams, ships and coastal stations. Baudot RTTY is included for decoding weather and international press broadcasts. Both Sitor A and Sitor B are supported for monitoring the extensive maritime and diplomatic traffic. Facsimile (to the printer only) lets you receive maps and pictures from around the world. Requires 12 VDC @.8A Text output to video monitor. \$499.95 (+\$8)

- ◆ Morse Code (CW)
- ◆ Regular Baudot RTTY
- ◆ Sitor Mode A (ARQ)
- ◆ Sitor Mode B (FEC)
- ◆ FEC-A
- ◆ Facsimile (FAX) FM
- ◆ Variable & Standard Shift

M-900 System Components

- A complete M-900 system would require:
- Universal M-900
 - 12 VDC Power Supply
 - Your SW Receiver
 - Video Monitor
 - Parallel Printer
 - Cables for above
- Please write to Universal for full information on the M-900 and the above optional items.

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By E. Noll. Low cost, easy to erect antennas for LW, MW, FM, SW, SCAN and HAM. \$16.95

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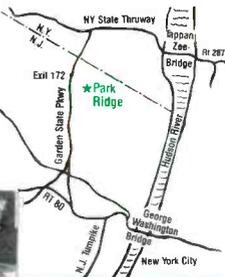
At last, a world class, world band car radio that's worthy of the name. Tune in broadcast stereo FM, AM, and Shortwave from 3200 to 21850 kHz or listen to your favorite stereo cassette tape. It's all on the new Philips DC777.

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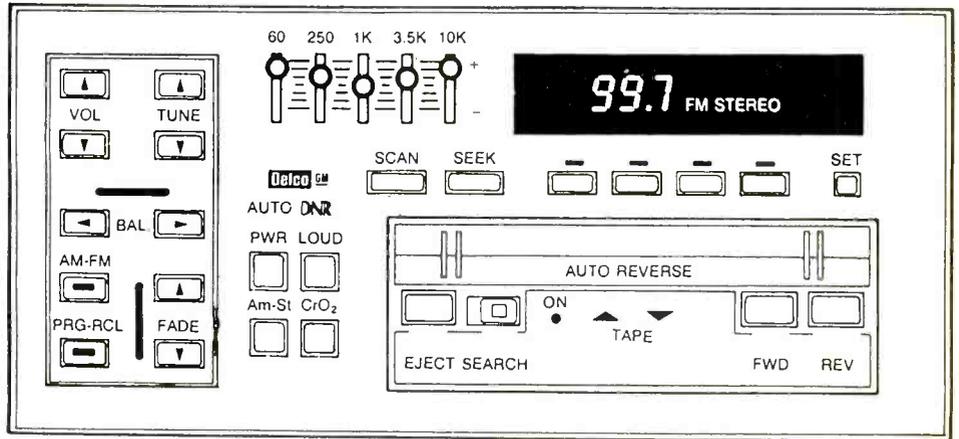
CIRCLE 115 ON READER SERVICE CARD

BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Bring Back That Old Time Rock & Roll



Try groping around in the dark while driving to make this little devil louder, or to tune it across the band. No way!

Remember the old time AM-only car radio? It had two controls. One turned it on and off and also adjusted the volume. The other one moved a red marker back and forth across a warmly lit slide rule scale so you could pick your station.

As time went on, they improved these things by adding a series of push-buttons to assist in tuning. If you had a couple of favorite stations, you could tune them in manually and then quickly set them up on the push-buttons to gain instant access to them without tuning around with only one hand on the steering wheel.

Eventually better models added the FM band, so you could select from AM and also FM stations. Then, not willing to leave well enough alone, they decided to add the capability to play tapes. By my estimation, even the tape capability was more than really necessary. But, tapes (and the CD's that are replacing them) are a part of life these days, so this capability was a reasonable extra.

But you know Detroit, they never know when to leave well enough alone until it's too late. Detroit kept improving American cars by removing the "wing windows," by taking convertibles off the market, and instituting so many other great ideas that others have now practically taken away their market.

All too often, Detroit is content with making vehicles that cost more than they're worth, run poorly, are sloppily built, guzzle gas, quickly get body rot and fading paint jobs, then either konk out or else end up with a puny resale or trade-in value long before you've gotten finished paying for them. All kinds of meaningless chrome geegaws, false

air scoops, and plastic trim seem (to me, at least) to be the major external design improvements from one year to the next in at least some of the Detroit metalwork.

But I must admit that, in the area of car radios, Detroit products have continued to develop and evolve at an accelerated rate. Had the vehicles themselves kept up at the same rate, they'd look and drive like something from a science fiction movie and the manufacturers wouldn't always be crying the blues.

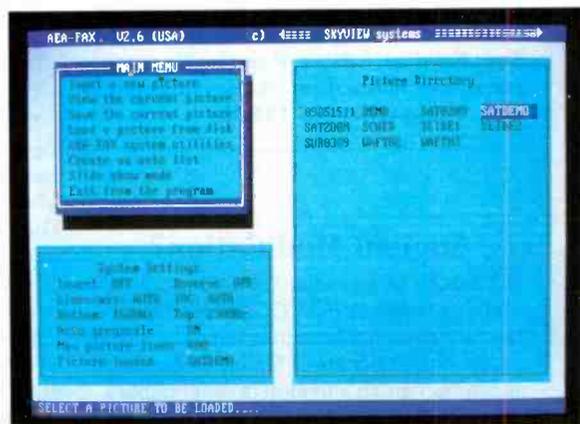
My '86 Trans-Am came equipped with a Delco/GM (Motorola) AM stereo and FM stereo radio and cassette player. It plays fine, but it's a nuisance to operate while driving. Gone are the two convenient knobs that made everything so easy to use on the road. There aren't any knobs at all, just seventeen little tiny buttons, plus four (no longer five) station push-buttons, plus five sound equalizer slide switches, and four tape deck control buttons.

There's a digital clock that's part of this radio. When the vehicle's headlights are turned on, the radio/clock LED's automatically dim because the set assumes that its night. Where I live, the traffic laws require that headlights must be turned on any time the windshield wipers are operating, even in daylight. That means, the digital clock can't be seen and is useless on rainy days. If seeing the clock is difficult, setting the time is a major production.

Frankly, the five-band graphic equalizer is not necessary on a car radio. I could have been very happy without four speakers plus balance and fader controls, especially since

(Continued on page 79)

Weather FAX



AEA-FAX is menu-driven and mouse compatible for ease of use.

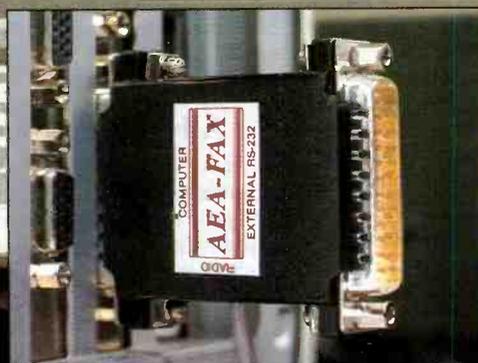
AEA-FAX is all you need to interface with your HF receiver and PC-compatible computer to pick up great looking, information packed weather maps, photos and charts.

Its features include an on-screen Miniscope tuning display, unattended image capture, slide show mode for showing multiple images, disk and printer interface, 16 grey levels (VGA) or false-color separations (EGA), and much more.

If you have an interest in the weather, look no further. The device plugs into your existing COM port (1 or 2) and into your HF receiver's External Speaker jack for quick and easy setup; just plug & play!

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To receive a catalog of our complete product line, call toll free (800)432-8873.



The compact AEA-FAX hardware includes a 'daisy-chain' RS-232 input.



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MAILBAG

LETTERS TO THE EDITOR

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

Ancient Modulation?

A bunch of us in the "AM community" would like to thank POP'COMM for the story in your November issue that helped us share a part of the Amateur Radio hobby that doesn't get much attention in other publications. I'm a contract engineer for radio stations in seven states and I credit much of my early hands-on experience to working with AM rigs like we use on the ham bands. In some small way, such experience helps the broadcast industry by allowing a place to experiment with such transmitters besides those at broadcast stations.

John Armstrong,
On the road in WV

For about twenty years, I have been on the fringe of communications as a hobby. That's because my career is that of a technician at the local telephone company. Your article on "Classic Radio" (AM) in November, however, made me want to explore the possibilities of getting my Amateur license.

Near the C&P Telephone's headquarters in Towson, there's an annual hamfest in Timonium, Maryland. A lot of older gear changes hands there. I picked up an old Hammarlund SP-600 communications receiver at this gathering. This tube-type set was not designed for SSB reception.

Until your article, which pointed out where to find some good sounding two-way communications in AM-mode, I had been listening only to foreign shortwave broadcasts. While I had thought some of the larger national radio outlets sounded good, they really paled with some of the hams I found around 3880 kHz.

Why has there been so little attention to AM activities in ham radio? It seems a great way to introduce newcomers to this hobby. I appreciated your coverage of AM hamming.

Herman Kleinman,
Baltimore, MD

Selected English Language Fan

I thank you for running the Selected English Language Broadcasts features. I am fairly new at far away radio listening. You've got me as a lifelong reader.

Sam Bigears,
Dearborn, MI

Public Awareness

One afternoon, I brought my small table-top scanner and my shortwave portable to the office. I put them on my desk just to see what kind of reactions they would inspire. The two most commonly asked questions were:

- 1) Can you talk on them?
- 2) Do you need a license to use these?

One rather confused chap walked over, studied the radios, and was primarily interested in knowing if was legal to own them.

I thought it an interesting mini-survey of the public's perception of our hobby.

Maryanne Kehoe,
Atlanta, GA

Newly Discovered

Since I got into scanning a little more than a year ago, I have been wondering if there was a magazine devoted to this hobby and to shortwave listening. One day I was in a magazine store and spotted *Popular Communications* on the rack. As I looked through an issue, it seemed to be the perfect magazine for my interests. When I got it home, I read it cover-to-cover. I haven't missed an issue since that day. I use a modified Realistic PRO-34 scanner, also a Radio Shack Patrolman SW-60, and a Panasonic RF-B65.

Thomas Krusekopf,
Parker Falls, WI

A Solution to His Need

I am looking for something that can pick up a whisper from 300 to 400 feet away.

Myron Varland,
Watsonville, CA

My mother-in-law immediately comes to mind. — Editor.

Club Stuff

Greetings from the American Shortwave Listener's Club (ASWLC). I am writing to thank you for mentioning our club in the October issue's mailbag section. Since the Desert

Storm War there has been a marked increase in shortwave listening. Events in the Mideast and Europe are happening so rapidly that it has become apparent that even Gorbachev had to tune in to find out what was going on in his own country last summer!

Stewart Mackenzie, General Manager,
American Shortwave Listeners Club,
16182 Ballard Lane,
Huntington Beach, CA 92649-2204

In addition to those groups we mentioned last October in response to several reader inquiries, we would also like to remind readers to the following clubs worthy of our readers' attention:

Radio Communications Monitoring Association, Inc. (RCMA), P.O. Box 542, Silverado, CA 92676.

Association of Clandestine Enthusiasts (ACE), P.O. Box 11201, Shawnee, KS 66207-0201.

Ontario DX Association (ODXA), P.O. Box 161, Station "A," Willowdale, Ontario, Canada M2N 5S8.

National Radio Club (NRC), P.O. Box 5711, Topeka, KS 66605-0711.

Worldwide TV-FM DX Association, P.O. Box 514, Buffalo, NY 14205-0514.

Virginia Monitoring Digest, P.O. Box 34832, Richmond, VA 23234-0832.

Scanning Wisconsin, c/o AJC Inc., W. 17912 Pearl Dr., Muskego, WI 53150-9608.

We are pleased to continue to recommend them based upon the useful content and general quality of the publications they send out, which we see here on a regular basis. And, of course, we also recommend those we previously listed in the October issue; ASWLC, ADXR, and Radio Monitors of Maryland. — Editor.

Advancing Backwards?

Your editorial in October regarding the problems with trying to obtain cellular coverage in all areas serves to remind all of us that no single two-way radio system or service is infallible, regardless of how modern, advanced, high-tech, or costly it might be.

Wise travelers carry a second or back-up system. This is particularly important if a person has a disability or a health condition. A CB radio can back up a cellular, and vice versa. Most boaters carry a CB back-up in addition to their primary VHF-FM radio.

Thanks for POP'COMM's support of our efforts.

Ron McCracken, President,
REACT International, Inc.,
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Wichita, KS 67214

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BEARCAT BC-147XLT 16 CHANNEL BASE SCANNER

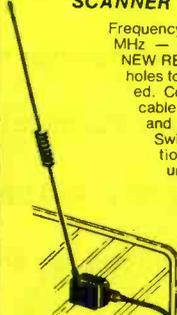
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WWCR: Shortwave From Nashville

America's Home-Grown Voice Of The People

BY GERRY DEXTER

There are probably no other frequencies on the entire shortwave dial—except perhaps those used by Radio For Peace International—where one can find such an unusual assortment of programs than those used by WWCR in Nashville, Tennessee.

The call letters stand for “World Wide Christian Radio” and there is certainly anything but a shortage of ministers (and ministerettes) simultaneously beseeching and haranguing the listener to get his or her spiritual act together. Even here there is a fascinating variety of program formats and preacher styles.

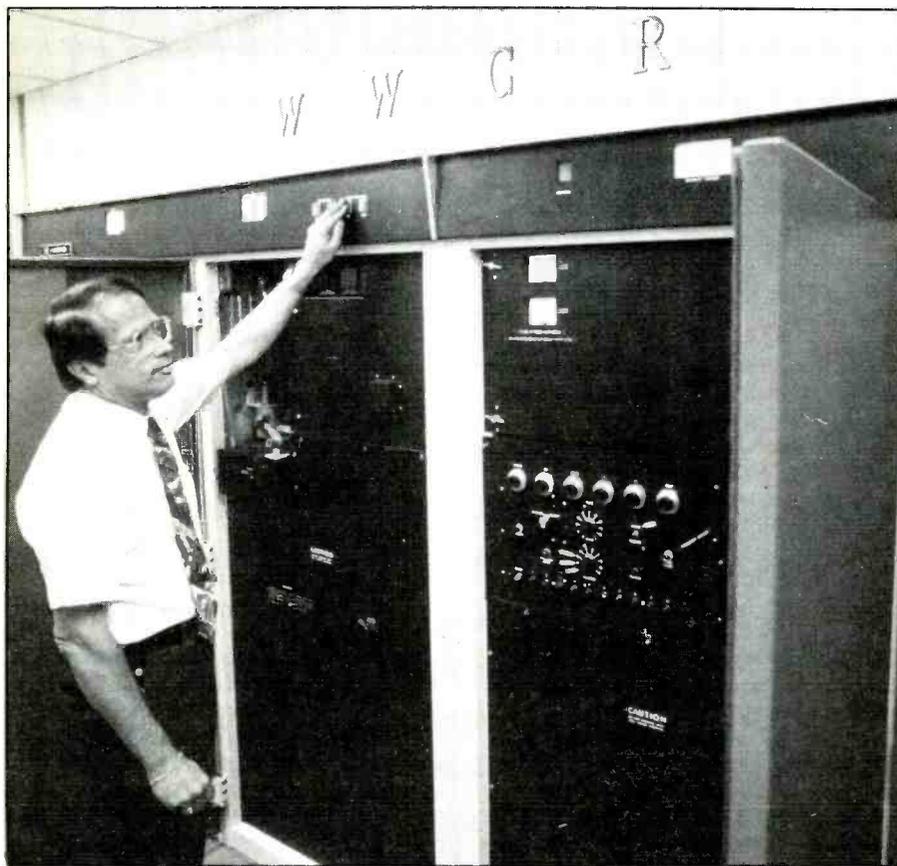
There are literally dozens of them. From little 15 minute programs such as Creflo Dollar Jr.'s “World Changers Ministry” (2015 Monday through Friday) to the daily 5 minute “Spiritual Warfare” at 1505. Not surprising-

ly, the amazing Dr. Gene Scott is the stamina champion, holding forth with a five hour broadcast from 0300 to 0800 Monday through Friday. Perhaps his schedule serves as just a warm up for his 24 hour run each Saturday and Sunday! Only a couple of the programs on WWCR are locally produced, all the rest are from independent producers whose programs are aired on tape via satellite.

Get past the religious pitches, though, and you can find quite a number of programs which, even if they haven't the stuff to make regular listening a habit are, interesting secular curiosities.

One of these is Tom Valentine's Radio Free America telephone talk show which is advertised as “Rip-Roarin' Radio—Seat Belts Required.” Valentine specializes in going after

the establishment, mixing politics and offbeat conservative-oriented topics into a two hour nightly dose of no holds barred discussions with listeners and studio guests. Fed via the Sun Radio satellite network, Valentine is on nightly at 0200. Valentine tells WWCR the mail response he gets from his shortwave out-pulls the combined mail produced by the 42 AM and FM stations which air the program! Outpulls by three times as much to the tune of something like 100 thousand letters a year! Radio Free America was first heard on shortwave being relayed by pirate station Free Radio One back in the spring of 1989. WWCR also carries Sun Radio's “San Francisco Live” from 0630 to 0900 and another Sun program “American Sunrise” at 1205. “For The People,” focuses on consumer and legal issues. Host Chuck Harder features

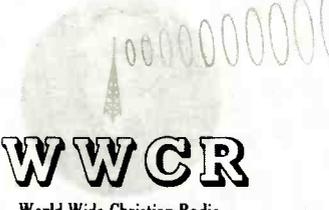


▲ The control room at WWCR.

◆ WWCR uses a pair of Harris SW-100B kilowatt transmitters.

4647 Old Hydes Ferry Pike Nashville, TN 37218 USA

15,690 KHZ
7,520 KHZ



WWCR
World Wide Christian Radio

Reports to WWCR are eventually rewarded with this QSL card. The address shown on the card is no longer correct.

"THY WORD IS A LAMP UNTO MY FEET" PSALM 119

WWCR INTERNATIONAL RADIO
15,690 KHZ.
7,520 KHZ.

Nashville, Tennessee U.S.A

guest experts dealing with problems and questions phoned in by listeners. It airs daily from 0006-0200.

Radio New York International, which gained fame as an offshore pirate station, briefly broadcasting from the M/V "Sarah" a few years ago, is on WWCR as a sort of pirate radio program, billing itself as a "free form, free speech" station, "dedicated to the concept of open exchange on information and ideas." It airs on local Sundays at 0100.

Signals, a magazine show aimed specifically at the shortwave listener and communications enthusiasts began on WWCR last October and airs 0335-0430, following "World of Radio." The program gives special emphasis to pirates, clandestines, numbers, utility sta-

tions, scanning, satellites and other subjects of interest to the SWL.

WWCR has also become player in the radio war against Fidel Castro. It's schedule includes several programs produced by anti-Castro groups: Voz de Directoria de Revolucionario Democratico Cubana (from the Cuban Democratic Revolutionary Party) at 2215, La Voz de Junta Patriotica Cubana (Junta Patriotica Cubana) at 2230, La Voz de Tribuna Libre (Alianza Cubana) at 2300 and Radio Voluntal Democratica (Partido Revolucionary Cubano Autentico) at 0000, all on local Sundays. Aired daily at 2305-0000 is Esperanza—La Voz de los Municipios de Cuba en Exilo (Municipos de Cuba)

Some of the other programs aired include news from the USA Network, aired about every other hour on weekdays. "The Voice of Joy" in Mandarin Chinese at 1130 Saturday and 1200 Sundays, Israel Press Review (from Kol Israel) on Sundays at 1115. Also "Financial Advisor" daily at 2205, program in Arabic, "The Spoken Word of God" on Saturdays at 1100, "Farm and Consumer News" daily at 0900. Presidential press conferences are aired via the USA Network. "USA," incidentally, is a Christian satellite network which claims to have one of every three Christian stations as an affiliate.

WWCR is owned by F.W. Robbert Broadcasting, which also owns and operates WNQM (Nashville Quality Ministeries) with 5,000 watts on 1300 mediumwave. Both the shortwave and mediumwave studios are located at 1300 WWCR Avenue, Nashville, 37218. That's a new address, but it did not entail calling on your friendly local U-Haul. The Nashville Metro Council changed the address and street name last summer. F.W. Robbert Broadcasting also owns stations WITA in Knoxville (1 kW on 1490) and WVOG in New Orleans with 1 kW on 600 kHz. A third station, WMQM in Memphis, was sold last year to generate capital for the purchase of the second transmitter.

When WWCR was finally granted a license and got on the air it was a case of "third time's a charm." WWCR had petitioned the FCC for shortwave approval twice before. One application, made well before the successful effort of Joe Costello's WRNO, was virtually ig-

nored by the FCC. A later attempt was beset with problems involving land and financing. The third try, after WRNO and others had been granted licenses, was successful and the first test transmissions came on during May, 1989.

WWCR's transmitters are located seven miles east of downtown Nashville, also the site of the mediumwave stations. Two Harris SW-100B (100 kW units) are in use. Both can operate on ten pre-set frequencies and can switch from one to another in ten seconds or less. WWCR has a construction permit to install a third-100 kW transmitter but no fixed air date for this has been set. Two antennas are used—a rhomic and a TCI Super High gain log-periodic. Due to technical problems with the unit the newer transmitter is currently operating with half power.

The frequencies assigned to WWCR are 7535, 7520, 12160 and 15690. Two frequencies are active at most hours, each carrying different programming. As of last fall, however, the 7520 signal was causing interference with a fixed radio service in Australia, after 0600 UTC. This has resulted in closing 7520 at 0600. Programming which would normally air on 7520 after 0600 was being switched to 7435. As a result, the post-0600 secular programming normally carried on 7435 has been suspended until the problem can be resolved.

George McClintock is a general manager of both WWCR and WNQM. He has been an avid shortwave listener "since the days of the (Hallicrafters) Sky Buddy" receiver and does his share of hardcore DX'ing and QSL'ing as well as general shortwave listening.

Some DX'ers have complained about WWCR's "no data" QSL cards and, at times, the slow response to reports. The reason for that is simply the deluge of mail the station receives, something around 100,000,000 letters a year. McClintock says that a couple of times a year the entire staff is pressed into service over a period of several days to a week in an effort to catch up with the backlog!

Due to the Australian interference problem the WWCR schedule is a bit messed up at this writing. But if you check the usual frequencies at various times it's hard to miss the powerful WWCR signal with its unusual mixture of religious and secular programming.

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Selected English Language Broadcasts

Winter – 1992

BY GERRY L. DEXTER

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

Time	Country/Station	Frequencies
0000	R. Norway (Sat/Sun)	9645
	R. Nacional, Venezuela (40)	9540
	R. Beijing, China	15285, 17705
	R. Havana, Cuba	11950
	R. Prague Int'l, Czechoslovakia	7345
	V of Greece (30)	9396, 9420
	R. Netherlands (30)	6020, 6165, 11835
	Spanish Nat'l Radio	9630, 11880
	R. Moscow	7115, 7150, 9600, 9685
	R. Kiev, Ukraine	11790
	R. Yugoslavia	9620, 11735
	Croatian Radio (30, via WHRI)	7315
0100	Deutsche Welle, Germany	6040, 6085, 6145, 7120, 7140, 9565, 9610, 9640, 9770, 11865
	R. Norway (Sat/Sun)	9605
	R. Austria Int'l	9875, 13730
	R. Prague Int'l, Czechoslovakia	5930, 7345
	HCJB, Ecuador	9745, 15155
	RAI, Italy	9575, 11800
	R. Japan	5960
	BBC	5975, 6175, 7325, 9590, 9915, 11750, 12095, 15260
0200	R. Tirana, Albania (30)	9580, 11835
	R. Norway (Sat/Sun)	9605
	R. Havana, Cuba	11950, 15140
	R. Cairo, Egypt	9475, 9675
	R. Budapest, Hungary	6110, 9520, 9585, 9835, 11910, 15160
	R. Portugal	9555, 9600, 9705, 11840
	R. Romania Int'l	5990, 9510, 9570, 11830, 11940, 15380
	R. Sweden	9695, 11705
	Swiss R. Int'l	6135, 9560, 9885, 12035
	V of Free China, Taiwan	5950, 9680, 11710
0300	Deutsche Welle, Germany	6045, 6085, 6120, 7275, 9545, 9605, 9640, 9770
	R. Tirana, Albania	9580, 11825
	R. Sofia, Bulgaria	11720, 15160, 17825
	R. Norway (Sat/Sun)	9645
	R. Nacional, Venezuela (40)	9540
	R. Beijing, China	9690, 11715, 15285
	R. Japan	15325
	R. Netherlands (30)	9590, 11720
	TRW, Bonaire	9535, 11930
	UAE Radio, UAE	15400, 15435
	R. Cultural, Guatemala	3300
	R. Botswana	4830, 7255
0400	R. RSA, S. Africa	7270, 11900, 15440
	R. Havana Cuba	11760, 11950, 15140
	R. Prague Int'l, Czechoslovakia	7345, 11990
	R. Beijing, China	11685, 11840
	V of Turkey	9455
	R. Georgia (USSR)	12050
	R. Namibia	3270, 3290
	TIFC, Costa Rica	5055
0500	Deutsche Welle, Germany	5960, 6045, 6120, 7110, 9535, 9670, 9690
	R. Kiribati	14917.5
	R. Austria Int'l (30)	6015
	R. Canada Int'l	6150, 9570
	Spanish Nat'l Radio	9690
	Vatican Radio	6245, 7250, 11740
	R. Lesotho	4800
	V of Nigeria	7255
	Ghana Bc. Corp	4915
0600	R. Georgia (SSR)	12070
	R. Havana Cuba	11760
	R. New Zealand Int'l (30)	9700
	R. Polonia (30)	7270
	R. Latvia (Sun)	5935
	V of Mediterranean, Malta	9765
0700	AWR Europe	7230
	HCJB, Ecuador	15270, 17790
	V of Free China, Taiwan	5950

Time	Country/Station	Frequencies	Time	Country/Station	Frequencies
	ELBC, Liberia	7275	1500	R. Norway (Sat/Sun)	11870
	TWR Monaco (30)	9480		R. RSA, S. Africa	7230, 15270, 17840
0800	R. Australia	9580, 15240		WRNO, Louisiana	15420
	Solomon Is. Bc Corp	5020, 9545		R. Sweden (30)	17875, 21500
	R. For Peace Int'l, Costa Rica	7375, 15030		Swiss R. Int'l	21630
	KTWR, Guam	11805, 15200		V of Ethiopia	9560
	CFRX, Canada	6070		V of Greece	11645, 15640, 17535
	V of Indonesia	11755, 1785	1600	UAE Radio, UAE	21605
0900	HCJB, Ecuador	9745, 11915		R. For Peace Int'l, Costa Rica	13630
	R. New Zealand Int'l	9700		Rep. of Yemen Radio	5970, 7190
	BBC	12095, 15070		R. France Int'l	11705, 17620, 17795, 17850
	R. Afghanistan (30)	17655, 21600		HCJB, Ecuador	15270, 21455, 21480
	NBC, Papua New Guinea	4890		WINB, Pennsylvania	15295
	CKFX, Canada	6005	1700	R. Surinam Int'l (25)	17835
1000	V of Vietnam	9840, 12020, 15010		HCJB, Ecuador (30)	15270, 21455, 21480
	R. RSA, S. Africa	17835		WWCB, Tennessee	12160, 15690
	R. Australia	9580, 15240		WHRI, Indiana	11790, 15105
	R. Beijing, China	11755	1800	R. Nacional, Venezuela (40)	9540
	Christian Science Monitor	9455, 9495		R. Afghanistan	11845, 15510
	R. Moscow	9600, 11840		R. Luxembourg	15350
	FEBC, Philippines	9800, 11685		WMLK, Pennsylvania	9465
1100	V of Vietnam	7416, 9732		Kol Israel	11585, 11675, 11590, 17575
	R. New Zealand	9700	1900	R. Havana Cuba	17705
	VOIRI, Iran (30)	7215, 9575, 9696, 11790, 11930		HCJB, Ecuador	15270, 17790, 21455m 21480
	R. Pakistan	17900, 21520		All India Radio	11620
	R. RSA, S. Africa	9555, 11860, 11900		VOIRI, Iran (30)	6140, 9022
	R. Nacional, Venezuela (40)	9540		RTV Algerienne, Algeria	17745
	R. Austria Int'l (30)	21490	2000	Kol Israel	11585, 11605, 11675, 15640, 17575, 17630
	R. Finland Int'l	15400, 21550		R. Georgia (USSR)	11760
	R. Japan	6120		Christian Science Monitor	15665
	R. Pyongyang, N. Korea	9977, 11335		R. Damascus, Syria (05)	12085, 15095
	TWR, Bonaire	11815, 15345		BSKSA, Saudi Arabia	9705, 9720
1200	R. Canada Int'l	9635, 11855		V of Turkey	9685
	HCJB, Ecuador	115115, 17890	2100	R. Sofia, Bulgaria (45)	9700, 11660, 15110, 15310, 15370
	R. Finland Int'l (30)	15400, 21550		R. Norway (Sat/Sun)	9590
	R. France Int'l (30)	21635		R. Nacional Venezuela (40)	9540
	R. Korea, S. Korea (30)	9750		R. Canada Int'l	9755, 15325
	Christian Science Monitor	9495, 13760		R. Cairo, Egypt	9900
	R. Beijing, China	17855		R. Damascus, Syria	12085, 15085
	R. Tashkent, Uzbekistan	15460		V of Free China, Taiwan	17750, 21720
	R. Yugoslavia	17740, 21600		R. Yugoslavia	11735
	R. Bangladesh (30)	15207	2200	Kol Israel	9435, 11585, 11605, 15100, 15640, 17575
	Radiobras, Brazil	11745		V of UAE, UAE	9660, 11965, 13605
	R. Singapore	5010		All of India Radio	11620
	V of People of Cambodia	9695, 11938		R. Polonia, Poland (30)	7270, 9675
1300	V of Vietnam	9840, 12020, 15010	2300	R. Sofia, Bulgaria	9700, 11660, 15110, 15310, 15370
	KNLS, Alaska	7355		R. Norway (Sat/Sun)	11925
	BRT, Belgium	21810		BRT, Belgium	13655, 13710
	R. Beijing, China	11855		WRNO, Louisiana	7355
	Swiss R. Int'l (30)	21695		R. Sweden (30)	9695, 11705
	UAE Radio, UAE (30)	21605		V of Turkey	9445
	FEBC, Philippines	11685		R. Vilnius, Lithuania	11790, 15485
	AWR, Costa Rica	9725, 11870		All India Radio (15)	11715, 11745, 15110, 15135, 17830
1400	R. Austria Int'l	21490			
	R. France Int'l	17650, 21675			
	Christian Science Monitor	13760			
	R. Moscow	11840, 15375, 17810			
	BBC	12095, 15070, 17640, 17705, 21470, 21660			
	R. Jordan	9560			
	R. Ulan Bator, Mongolia	9795, 13750			

Recalling Radio's Past

The Amazing Chinese Mystery Station That Operated From An Underground Cave!

BY ALICE BRANNIGAN

When reader Orv Lyttle, of Burnaby, British Columbia, sent us a copy of his 1949 veri letter from *The Voice of China*, in Chungking, he pointed out that it was a Nationalist Chinese station being operated while Chicom forces were sweeping down from the north. Also, he mentioned that the broadcast he heard came from studios that were located in a cave.

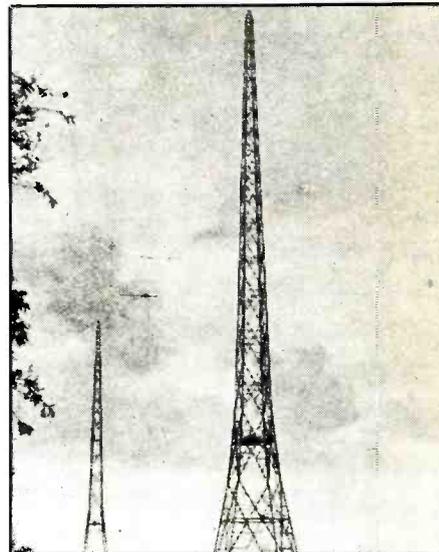
There certainly seemed to be more of a story to root out here. With a little digging, we found that story, and the history of early broadcasting in China, to be as exciting as any we have come across in a long time.

Serious broadcasting in China began in 1928 when the Northern Expeditionary Forces of the Kuomintang (the National Government) had just completed their mission of stabilizing the southeast provinces, and the capital had been established in Nanking. Prior to that, only a few very low powered broadcasters had operated on a sporadic basis in the northeast, the northern provinces, and Shanghai.



A 1936 QSL from station XGOA in Nanking, China. This station ran 75 kW and was often reported on 660 kHz by listeners in North America.

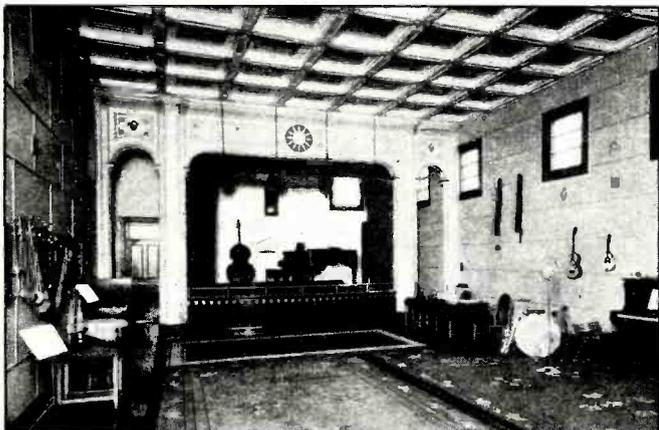
The National Government thought that broadcasting would probably be a quick and effective tool for widespread introduction of culture, explaining government policy, providing education, and offering entertainment. So, on August 1, 1928, a 500-watt Central



The two broadcast towers at Nanking's XGOA, in 1936.

In 1936, the Chinese Government Radio Administration verified for three ute stations, XPC, XPK, and XOJ, with this letter.

In the mid-30's listeners around the world reported Nanking's XGOX, which was on 9490 kHz, then later switched to 6820 kHz.



CHINESE GOVERNMENT RADIO ADMINISTRATION
SASSOON HOUSE, JINKEE ROAD.
SHANGHAI, CHINA.

Oct.19, 1936

Mr. Joseph .

Dear Sir,

Referring to your letter of September 7, we wish to inform you that your reports on reception of our new stations XPC, XPK and XOJ are all o.k. as checked with our station log.

Yours truly,

T. C. Luo
Engineering Dept.



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The word is out! This all-new handheld is available now at Radio Shack. It's a solid performer and a dynamite value—built to tough commercial standards set by Radio Shack's own hams.

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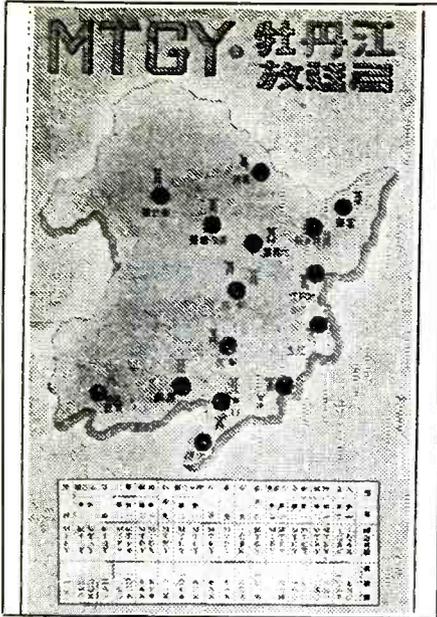
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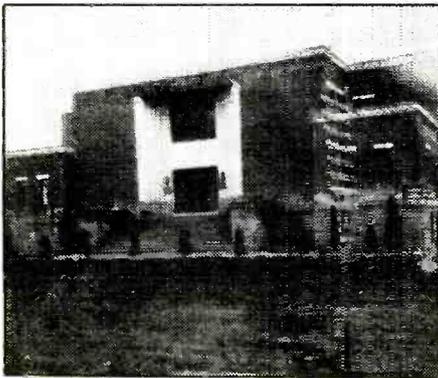
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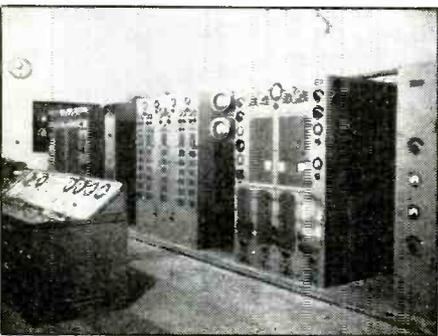
A Division of Tandy Corporation. Prices apply at participating Radio Shack stores and dealers. You must have an FCC Amateur Radio license of appropriate class to transmit with the HTX-202 transceiver.



The Japanese-run stations in Manchukuo, a former Chinese province, all used the same QSL card, but with different call signs imprinted. A map on this 1940 QSL indicates the locations of the major broadcasting stations.



Broadcast house in Chungking, where the offices were for The Voice of China after WWII, and before the communists.



The transmitters for the Voice of China, as they looked when located in the underground caves.

中央廣播事業管理處
中國國際廣播電台
 "The Voice of China"
 THE CHINESE INTERNATIONAL BROADCASTING STATION, XGOY
 Chungking, China

NR-ROL-1

October 12, 1949.

Mr. R. O. Lyttle,

Dear Sir:

Thank you very much for your letter of September 24, 1949 in which you write down a full sheet of program items as transmitted from our station. We have checked these items with our time logs and found them to be correct in general description, so I am very glad to verify your report on reception of the Chinese International Broadcasting Station, BCF 7, "The Voice of China" in Chungking operated on 11915 kc/s in the 25 meter band on September 24, 1949 from 13:00 to 13:35 hours G. M. T.

With great pleasure I learn that our station is one of the strongest in the 25 meter band with signal rating of 3-8 being as strong as the 50 kilowatts station in Manila.

We are enclosing a copy of our latest daily programme schedule as you request. Please tune in on time and let us know your reception conditions again.

Yours sincerely,

Fung Chien
 Director,
 "The Voice of China"

Here's a DX'er's prize! The veri letter from The Voice of China was sent during the last days of Nationalist China's stay on the mainland. (Courtesy Orv Lyttle, British Columbia.)

Broadcasting Station was built in Nanking. The station's popularity firmly established the government's belief that its broadcasting activities should be expanded.

Four years later, the powerful 75 kW transmitter formally began operating in the national capital on November 12, 1932. The transmitter was the only high powered station in East Asia and was heavily used for propaganda purposes against the Japanese. The Chinese had been involved in conflicts with Japan since 1894. In 1895, China ceded Korea, Taiwan, and other areas to Japan. In September, 1931, Japan seized the north-eastern provinces (Manchuria) and set up a puppet state called Manchukuo. It was apparent that Japan would eventually invade China proper.

Within the limitations of its finances, the Chinese government continued to expand its broadcasting efforts. A shortwave transmitter was added to the Central Broadcasting Station, and stations in Changsha and Canton were built. Then the station in Fookow was taken over, and a station was started in Hopenh province (later it was moved to Siam).

There were also some stations operated by provincial and municipal governments, plus a few small commercial stations in Shanghai and Soochow. Altogether, some 4 to 5-million listeners comprised the Chinese radio audience.

The Sino-Japanese War

On July 7, 1937, Japan invaded China. In order to carry out its plans for long-term resistance, the Nationalist Government decided to move its center westward to Chungking. The civil broadcasting stations, primarily concentrated around Nanking and Shanghai, were all closed down by the war. The government forbade privately owned stations to be operated in the rear provinces because of national security fears.

The Central Broadcasting Administration realized that it needed to remain on the air in order to encourage the people to fight. Stations that had taken ten years to build up in the coastal cities would therefore have to be relocated to the interior. Unfortunately, the Central Broadcasting Administration was as

RADIO PEKING

Peking, China

February 29, 1957

Dear Mr. Schivo,

We are glad to confirm your reception report on our programme transmitted on 17745 kc/s dated January 28, 1957. We thank you for writing and hope you will continue to do so.

Sincerely yours,
Radio Peking

*The picture is of the north peak on Mount Huashan,
Shensi*



After the Nationalists left the mainland, a QSL from China usually meant Radio Peking (until the name Peking got bounced). This QSL dates from 1957. (Courtesy Walt Schivo, KB6BKN, California.)

The closest you can get to a modern day heir to the old Voice of China is by monitoring The Voice of Free China, from Taiwan, ROC. It's a private company under contract to the ROC government.

poorly organized for war as was the Chinese army, itself.

At the end of 1937, when the Chinese troops on the East Front were in a forced retreat, the 75 kW station in Nanking was either automatically destroyed or moved westward, as that city fell to the invaders. The duties of the Central Broadcasting Station were temporarily taken over by stations in Hankow (which had shortwave facilities) and Changsha. A 60 kW station in Kunming was quickly set up, plus a 10 kW shortwave outlet in Kweiyang.

The Central Broadcasting Station resumed service from Chungking with a hastily rebuilt 10 kW mediumwave transmitter and two shortwave transmitters, one running 4 kW and the other 7.5 kW. A 35 kW shortwave transmitter was in feverish preparation day and night, notwithstanding the pressures of the ongoing war.

The 35 kW station commenced operation in 1940, with its transmitters and studios located in bomb-proof underground caves. It was operated as the Chinese International Broadcasting Station, popularly called, *The Voice of China*, XGOY.

Other government-owned stations near the front were moved back, one after another and were re-established in the interior. Besides these, several additional stations were built, giving the Central Broadcasting Administration a total of eighteen transmitters (including one mobile station) as WWII began.

In August of 1945, WWII ended. The terms of the Japanese surrender included the return of all seized lands to China. The Japanese had established more than forty broadcasting stations in the occupied areas. These were immediately taken over by China's Central Broadcasting Administration. Of these stations, the transmitters in Peiping (now Beijing) and Taiwan each ran more than 100 kW.

After the surrender, privately owned stations at all power levels quickly started to

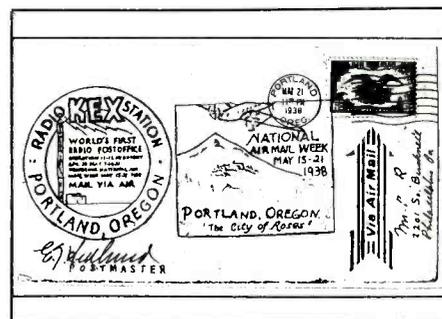
spring up across China, with and without authorization. Shanghai, alone, had more than 100 stations, resulting in so much interference that listeners could hardly pick out one station from the other. A crackdown by the Ministry of Communications in reaction to this chaos removed most stations from the air, with the remainder operating under strict supervision. A mere fifty private stations remained, none running more than 500 watts.

Postwar Problems

Although the Chinese government announced an ambitious set of plans to continue expanding its mediumwave and shortwave broadcasting activities after WWII, the chance never came to do so. Almost as soon as WWII ended, China was racked with internal disturbances between the National Government, communists, and other factions. *The Voice of China* was never able to emerge from its underground cave, and was still being operated there in 1949, even as China started to fall under communist rule, beginning that same year.

The communist People's Republic of China was proclaimed on September 21st, 1949. On December 8, 1949, the Nationalist Government of China moved to the island of Taiwan, ninety miles off the Chinese mainland.

Thus, Orv Lyttle's verification is a true curiosity. It is from Chungking. Dated October 14th, 1949, it confirms his reception of September 24th. He heard *The Voice of China* (then using a new callsign, BEF7), after the PRC had come into being and declared the earlier government illegal. Somehow, his reception report still managed to get to the official Nationalist station. The station's Director, Fung Chien, verified Orv's reception without so much as mentioning its tenuous existence. In fact, the Director asked him to write again! By December, the address would have been Taiwan.



Here's the KEX air mail post office first day cover submitted by Mike Northam.

A broadcaster in a cave, in China, during a revolution. That's exotic.

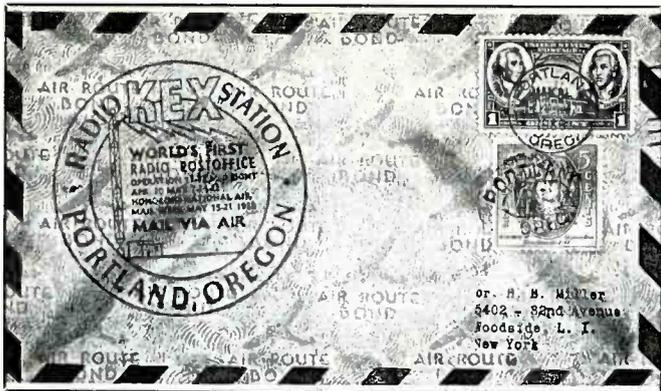
Taken To The Air

Thanks to Mike Northam, Banks, Oregon, we have an interesting mystery presented to us. Mike furnished us with a copy of a 1938 first-day cover envelope marking National Air Mail Week, May 15 to 21. One of the cachets (hand stamps) on the envelope, which was postmarked in Portland, OR, indicates that Portland broadcast station KEX would be the "world's first radio post office."

A photo of this envelope appeared in a Portland newspaper asking if anybody knew what this was all about, since attempts to learn more about it drew a blank. Even the present management of KEX can't guess what a "radio post office" might have been in 1938, nor do newspapers of the time add any information.

An actual first-day cover from this occasion was sent to us by L.G. Seabury, of Lake Worth, Florida. He also wonders what the idea was behind this promotion. The cachets are in violet ink.

If any readers wish to take a stab at the function of a radio post office, we welcome all guesses.



L. G. Seabury sent in this KEX air mail post office first day cover, which is slightly different than Mike Northam's.

RADIO STATION **W O V** FOR VICTORY
 5000 WATTS 1280 KILOCYCLES

OWNED and OPERATED BY WODDAM CORP.
 STUDIOS AT 730 FIFTH AVE., NEW YORK 19, N. Y.
 TRANSMITTER AT CARLSTADT, NEW JERSEY

To Tommy Kneitel Of N.Y., N.Y.

This is to verify your reception of WOV on Dec. 9, 1947

Your report is appreciated Hillis W. Holt
 CHIEF ENGINEER *HWH*

The man who made Bulova watches wound up a few mainsprings when he purchased New York's WOV and thereby stopped the hands of time on a major network deal. That's how the story goes. Here's a 1947 QSL from WOV. (Courtesy Tom Kneitel, New York.)

Time On His Hands

In 1929, John Iraci started a nice little radio station in New York City. It called itself WOV, and operated with 1 kW on 1130 kHz under the name International Broadcasting Corp., 485 Fifth Avenue. The transmitter was in Secaucus, New Jersey.

Iraci's station was a success, and was the cause of an eventual stir in broadcasting circles, although not through any fault of Iraci, himself.

So the story goes, in the early 1930's, CBS was planning on operating two separate networks, like NBC's Red and Blue networks. In connection with this, CBS would have had to acquire a second outlet in New York City. A rather complicated procedure was planned for this to take place.

The idea was for the Paulist Fathers, op-

erators of religious station WLWL, to purchase WOV for \$300,000 and then scrap WOV, transferring its facilities to station WPG in Atlantic City. Thus, WPG would acquire a full time sked on 1130 kHz with 1 kW. WLWL would then assume full time on 1100 kHz in New York, after which the Paulist Fathers would sell WLWL to CBS.

An innovative approach, but something went wrong. What went wrong was wealthy watchmaker Arde Bulova walking into John Iraci's office in April of 1937 and plunking down \$300,000 right on the spot for WOV. Everybody else's lawyers were still sending memos and shuffling papers while trying to work out their complex deal, and someone walked away with WOV. With WOV having been the centerpiece of the proposed CBS second network, the whole second network idea fell apart and was never heard about

again. It was one of the more dramatic coups in broadcasting for the mid-30's.

Bulova was rumored to be thinking of buying up several other stations around the nation in order to start his own network. But Bulova seemed happy just running his New York station, which he did for many years under the corporate name of the Woddam Corp., from 930 Fifth Avenue. In 1941, WOV switched frequencies to 1280 kHz and upped its power to 5 kW, devoting its daytime hours to Italian language programming.

Bulova's interests in WOV were eventually sold to new owners. Around 1960 the station gave up its famous old callsign to become WADO, serving the large Spanish language audience in the New York metropolitan area. The station continues on 1280 kHz with 5 kW (1 kW at night) with its very successful format. In 1990, new owners took over at WADO. The station made headlines about two years ago when it purchased faltering WGLI (Babylon, NY) on adjacent 1290 kHz. The reason WGLI was purchased was in order to remove it from the air so that WADO's signal on 1280 kHz would be easier to receive in Babylon and the surrounding area. An alternate plan was for WGLI to simulcast WADO. Eventually it was decided to shut down WGLI, although recently there was some talk of relocating WGLI many miles farther east where it can again be operated on 1290 kHz without diminishing the WADO coverage on adjacent 1280 kHz in the area it wishes to protect. The FCC turned down the idea.

It was the second time in the station's history when a purchase caused controversy. Twice in more than fifty years, that's not too often to shake things up. Is it?

March On

Hope we can get together in March. Thank you for your comments, and for furnishing old time radio QSL's (originals, if you can spare them, or else copies will do), old station listings, photos, and anything else relating to radio and wireless in past years. We appreciate your help in preparing this material.

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NEW! Shinwa SR001-B

List price \$799.95/CE price \$479.95/SPECIAL Continuous coverage from 25.000 through 999.995 MHz. If you're looking for an excellent synthesized scanner designed for mobile surveillance use, the new Shinwa SR001 scanner offers features never before offered at such a low price. When you purchase the wide band scanner from CEI, you'll get a free infrared wireless remote control that allows you to control your scanner from over 20 feet away. Selectable frequency steps of 5.0/10.0/12.5/20.0/25.0/50.0 or 100.0 KHz. are available. Dual antenna inputs terminating in an "N-type" and "BNC" connectors are included. Other features include 200 memory channels grouped in 10 banks of 20 channels, easy to read multi color LCD display, lithium battery for memory back-up, 35 channel per second high speed scanning, priority, timer and even an alarm to alert you to transmissions on your choice of one special frequency. We even include a mobile mounting bracket. The SR001 can be used for base station use with the purchase of the ACS-B 12 volt DC power supply for only \$34.95 each. A great sounding external speaker #SPE-B is available for only \$24.95.

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The fire department hazardous materials response teams and police department SWAT crews who need a reliable radio alerting system stake their lives on Shinwa. We offer a two-tone pocket pager with monitor feature and even a voice storage option at an affordable price. To order, we need your paging frequency as well as tone reed frequencies. For other configurations or two-way radio information, please fax us your specifications to 313-663-8888 or phone 313-996-8888.

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List price \$799.95/CE price \$529.95/SPECIAL Continuous coverage from 100 kHz through 1,300 Mhz. The ICOM ICR1 keeps you in touch with the world when you're on the go. The palm-size ICR1 is equipped with AM, FM and wide-FM modes to fully answer your monitoring needs. With 100 memory channels and a dual frequency selection system, you get a top-class communications receiver. Not only can you program scan searches only for signals within a specified frequency range, it's also possible to write frequencies of received stations automatically into memory. In addition, unwanted frequencies can be skipped. Order ICBC72-B battery rapid charger for \$99.95 and a BP84 1,000 ma. battery pack for \$74.95.

ICOM ICR100-B

List price \$799.95/CE price \$579.95/SPECIAL Continuous coverage from 100 kHz through 1856 Mhz. Now you can bring a wider world of broadcasting, VHF air and marine bands, emergency services and many more communicators into your vehicle. Icom's advanced ICR100 fully covers all the stations worth hearing with up to 100 memory channels and a multitude of features.

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Tracking The VHF Mystery Signal

A Strange Voice On 174 MHz Sets The Wheels In Motion

BY ROBERT BEKEN

Some time ago I needed a multi-channel receiver system for some consulting work. After building a two channel system using ICOM R-7000's, I realized that I could solve the problem in less rack space with Kenwood RZ-1's. After a lot of work and not just a little IBM PC software development, I had a nice rack of receivers ready to pull in just about everything imaginable.

To bring the matrix of receivers up to the sensitivity I needed, I upgraded the system by front-ending it with thermal junction cooled pre-amps which are connected to a few high-gain directional antennas. The cooled pre-amps give me an additional -3dB S/NR or so.

One day I was bored and goofing off—just twisting the dial on one of the off-line RZ1's and came upon a transmission of: "higher . . . higher . . . that's right . . . now hold it!" This was followed by other strange commands all given by a female voice. The transmission continued for maybe 10 minutes and then stopped. And this was 174.60 MHz.

The transmission seemed like what somebody pouring concrete would say to the crane operator. But it was really more like some kind of rhythmic command—like fishermen pulling in the nets. Now San Diego still has lots of tunaboats, but I couldn't imagine how this could be coming from San Diego Bay. The mystery was a dark one.

Over the next few weeks I tried the frequency again and again, and found that the voice would return at about the same time on certain days. A little light was shed on the mystery.

Now it was getting interesting.

I had trouble picking up the signal, however. It was either from a very low power rig or I was hearing it via some atmospheric phenomenon.

I live on a hill in La Jolla which is a suburb of San Diego. From this vantage point I can see as far as the mountains 50 miles to the east. So I thought to myself that maybe if I just DF on the signal next time it comes on I'll solve this puzzle in a snap.

Since I don't have a Rohde & Schwarze HF Direction Finder (\$123,000, thank you), I had to improvise. I used one of the multi-element Yagi's I had but tuned it right on to 174.6 and spun it at 30 rpm using a surplus 24v gearmotor. I connected the audio output from one of the RZ-1's and a pot connected to the gearmotor shaft to an A/D card in my PC and recorded the power input as a function of bearing and time of day. I just let the thing spin all week to average out the hiccups that might show up. The neat thing about PC's is that they don't mind doing stupid things like this 24 hours a day.

So I got an interesting plot showing that every afternoon things came alive and seemed to have a Monday, Wednesday, Friday at fixed times and a Tuesday, Thursday at other times. Hmmmmm.

I moved the gearmotor as far as I could (about fifty feet) and tried it all again for another week. The crude triangulation was not worth the effort expended but all in all things pointed to 030 degrees and towards a TRW research facility about three miles away.

I drove over to the TRW facility the next week and . . . nothing. The facility was nestled between several other multi-story Techno-buildings, but I still should have had a good shot at picking up the signal.

So, I split the difference and, using the next Thursday's schedule for a transmit time, I drove my car around in the clump of streets half-way between the TRW facility and my house. Bingo! It was weak but there it was.

The signal's source was the spiffiest office complex in the spiffiest part of San Diego—The La Jolla Triangle.

The office complex includes a Hyatt Hotel and The Sporting Club. The Sporting Club was on the *Lifestyles of the Rich and Famous* as one of the finest gyms in the world (it's a chain and there are clubs in At-

lanta, Los Angeles, Chicago, Irvine, etc.).

Yes, the transmission was not from the Hyatt, it was from the Sporting Club. It seemed to be emanating from their annex a few feet from the main facility.

It was from the wireless mike used by the aerobics department to order people to do their sit-ups!

Other than thinking myself a complete fool for not figuring this out day one, I wondered how many other clubs used wireless mikes.

I checked other gyms and their fitness programs and found that many of the other gyms in San Diego also used wireless mikes. More than 200 fitness classes are held in San Diego every day with over 4000 people participating. Where else are you going to find such a low power transmission bringing so much pain to so many people?

I've checked with the local experts and have been told that about 10,000 classes are held in the U.S. each day with an average total attendance of 200,000 people.

Access to these wireless mikes transmissions is not easy at all due to their low power and well-shielded environment, I can sure attest to that! To pick these signals up will require some detective work and a good scanner. Or at least the phone book, a street map and maybe a pair of sweats.

Most of the wireless mikes in use draw less than about 270 mW. Their effective radiated power is under 50 mW. You will need a high gain system to find them.

While some of the cheaper low power systems still operate in the 47 MHz band (Radio Shack, etc), most of the professional models have transitioned to the TV channels. They all seem to operate between channels 7 and 13. Here are the more popular frequencies: 169.5.5; 170.245; 171.905; 174.60; 174.80; 175.00; 177.60; 180.60; 181.60; 183.60; 184.00; 186.60; 190.60; 192.60; 194.60; 195.60; 196.60; 199.60; 202.40; and 203.40.

I doubt if you will get a QSL card from a gym, but a little bit more of your local RF spectrum will be mapped. So if you want a real challenge, scope out your local gyms!

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Volunteer Radio Cops

A Large Corps Of Listeners Tracks Down Deliberate Interference On Amateur Bands

BY JOHN BOSTON

Anyone who regularly monitors ham radio communications during hurricane and other emergencies is reminded once again that there is a certain element out there in radioland that gets its kicks from creating intentional interference to emergency, and health and welfare traffic. While intentional interference is a daily event on the ham bands (just check my DX "pile-up") it's a special problem when it happens under conditions involving emergency communications.

Finding the culprits is a difficult proposition, something which the FCC has too little money, too little equipment, too little time and too few personnel to do very much about. Fortunately, though, the amateur radio community has taken an active interest in policing its own ranks, as well as protecting its radio territory from would-be poachers.

There are two divisions of the American Radio Relay League which involve member ham operators in doing monitoring work from their own stations, compiling regular reports and even working with the guilty parties.

Monitoring of ham radio transmissions by other amateurs is the job of the Amateur Auxiliary. This is a cooperative undertaking of both the ARRL and the FCC's Field Operations Bureau which developed out of the 1982 Communications Amendment Act. It was noted then that the FCC spends less time monitoring and regulating hams than it does any other radio service, a situation due largely to the amateur service's own past efforts in policing its own members. The Auxiliary is administered by ARRL League Section Managers and Official Observer/RFI Coordinators.

The objectives of the Auxiliary are to foster a wider knowledge of, and better compliance with all of the laws and regulations under which amateurs operate; to extend the concept of self-regulation and self-administration to the ham service, to enhance the opportunity for individual hams to contribute to the public welfare as specified in the FCC's rules and to enable the FCC Field Operations Bureau to more efficiently and effectively utilize its own manpower and resources.

Members of the Auxiliary keep an ear peeled for interference to amateur transmissions caused by other amateurs. In addition to the routine "maintenance monitoring"



This hurricane command post was erected to handle communications during 1989's Hurricane Hugo. Too bad that some of its communications were deliberately jammed by ham band pranksters. A special corps of volunteers tracks down such jokers.

this involves keeping a watch for inadvertent, careless, malicious and harassment types of interference. The Auxiliary isn't allowed to enforce FCC rules, but it can work on obtaining evidence if so directed by the FCC.

The Auxiliary operates on several levels. The Official Observer program issues friendly advisories to amateurs when it spots operational or technical discrepancies in an amateur's operations. It also sends "Good Guy" notices to amateurs it observes operating in a manner exemplifying the best in operating practices or technical achievements. On a more local basis "Interference Committees" keep an ear out for interference on VHF repeaters and every attempt is made to solve such problems locally, without having to call on outside help.

Regional Monitoring Stations are a sort of ham version of an FCC monitoring station. In some cases the two may work together. Only a relatively few Regional Monitoring Stations are in operation. Every RMS belongs to a highly motivated, very experienced ham. He or she is authorized to issue much stronger notices to offending hams

and make every effort to solve any problems which may arise. Ideally, there should be only a few cases which reach the stage where they cannot be solved by hams and have to be turned over to the FCC for resolution. Such problems include interference or operational transgressions serious enough to warrant legal action.

Amateurs wishing to join the Auxiliary must pass a written exam based on the official *Auxiliary Training Guide* (published by the ARRL). The test covers everything from knowledge of the FCC rules to direction-finding techniques to the psychology of jamming. Having the necessary equipment, dedication, technical ability and tact are also necessary. At last report, there were 538 members of the Amateur Auxiliary.

The other half of the story is about AIRS—the ARRL Interference Reporting System. This group is charged with providing quality monitoring data on non-amateur transmissions causing harmful interference on ham bands. Harmful interference is defined by the International Telecommunications Union (in part) as "that which seriously degrades, obstructs or repeatedly inter-

rupts." But the mere existence of a non-amateur station in an amateur radio band doesn't meet these criteria, nor do one-time cases of interference. The interference has to have some sort of constancy or pattern to it.

AIRS has another aspect: to "establish a record of vigilant protection of the amateur bands (especially those frequencies allocated exclusively to the amateur service) so that administrations at international conferences may be appraised of their out-of-band operations." In other words—never give the other guys the impression that these territories are up for grabs. Those who illegally use the amateur frequencies, AIRS believes, must know their presence will soon be noted and reported, and complaints will be filed. AIRS is also available to develop band occupancy data or other special studies as may be required.

AIRS members, if not on specific monitoring assignments, are asked simply to spend as much time monitoring as possible, and to file regular reports with ARRL Headquarters—at least once per week. Information to be included in such reports includes the frequency of the interfering station, time span in UTC, the call or identification of the station if it is known, the emission type, the monitor's own call and any appropriate remarks such as the language used, operational patterns, direction bearings and such. This information then goes into a worldwide data bank shared with the other two International Amateur Radio Union regions.

The less than 50 members of AIRS submitted over 500 reports to the ARRL covering August, 1988. A glance through this compilation shows notes on a wide variety of transmissions. There were continuous single letter beacons on 160 meters, what may have been Russian fishing boats and encrypted CW. There was a Spanish language time station on 3810 which must have been HD2IOA in Guayaquil, Ecuador. AIRS monitors also noted various signals carrying high speed digital keying, encrypted radioteletype, the Russian "Woodpecker" (over-the-horizon radar), cordless phone harmonics, long periods of idling radioteletype, multi-channel frequency division multiplex (FDM), 5 letter code groups and many open carriers of long duration. There were CB operators using Spanish and English, Taiwan's Central News Agency using RTTY and any number of other bleeps and burps.

Among the broadcasters on the list were Radio Tirana, Deutsche Welle, Radio Australia, Radio Kiev, the Voice of Nigeria and several Radio Moscow transmitters—all on the 41 meter band where, it should be noted, most had a perfect right to be according to ITU regulations. A couple of unidentified broadcasters were found in the 20 meter band which is designated exclusively for amateur radio use.

Out of all of these reports, the ARRL forwarded only three to the FCC, citing these as ongoing cases of harmful interference.

One was a strangely encrypted RTTY signal on 14024; (non amateur) the second, encrypted digital keying on 14188; and the third, various types of harmful interference taking place between 28000 and 28296.

The Amateur Auxiliary and Amateur Interference Reporting Service are both playing important roles. Dedicated amateur operators who are members of these groups

provide an important service both to the amateur service as well as concerned U.S. government agencies. And those out there who encroach on amateur frequencies or who "get off" on creating deliberate interference should be aware that there are some very qualified people out there, equipped with high class radio gear. Someone out there is always listening—and taking notes.



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Ref: Rye Canyon Antenna Lab File #870529

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27.165	1.50	41
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27.265	1.75	50
27.315	1.95	57
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Scanning By Rail To Las Vegas

Train Frequencies Provide Extra Enjoyment During Two Days On AMTRAK

BY WALLY ELY

At first I couldn't decide if this was to be a *scannerfan* story, or a *railfan* story. When my son's fiancee Suzie asked, "Dad, how long can you listen to that thing before it drives you crazy?", I knew it would have a scannerfan orientation!

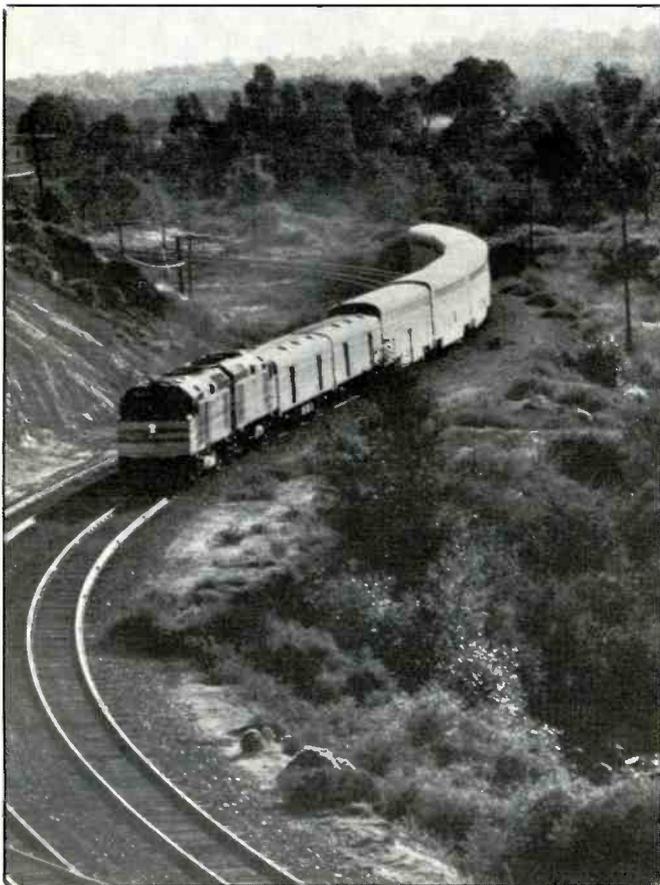
Monitors have been a part of my life since a two year stint as a radio news reporter in the 1950's. This love affair has continued unabated ever since. It reached a high point this summer when my wife Suzanne, my scanner, and I travelled in an AMTRAK

sleeper on the Desert Wind from Chicago to Las Vegas on vacation.

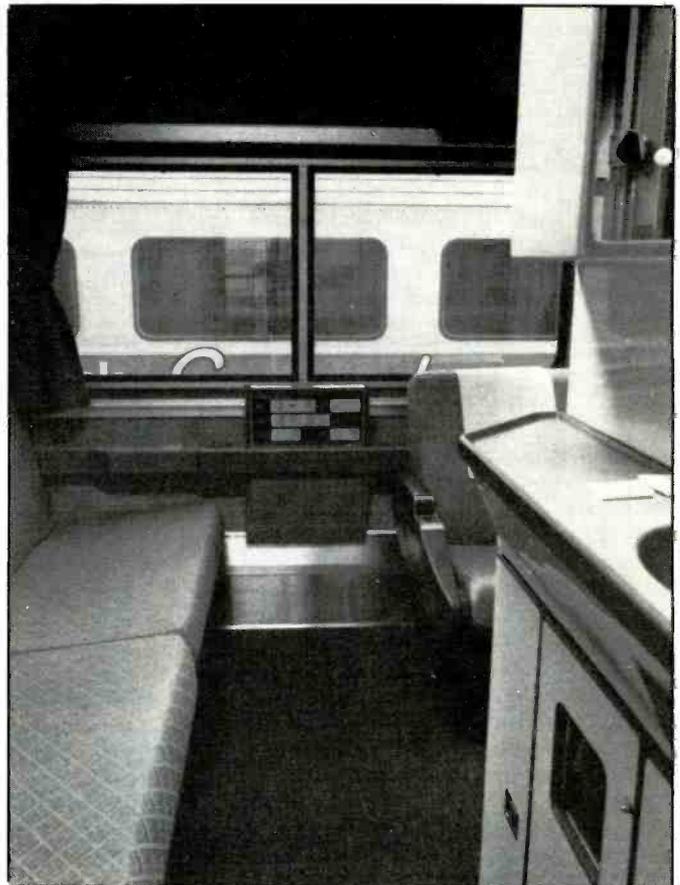
Scanning railroad frequencies adds a new dimension to a train trip. Clearly the scannerfan becomes involved in his new, shortterm environment in a way that takes him far beyond what the camerafan, videofan, or the "give me a good book to pass away the hours" traveller experiences.

XYLs reportedly tolerate scanner hobbyists; Sue not only shared the scanner listening, she brought her own electronics for

DX'ing—a battery-operated portable TV! For a time it seemed Sue was having better luck than I was. During the first evening on the train out of Chicago, she picked up some fading, rolling pictures of an American League baseball game featuring (unbelievably) her own favorites, the Boston Red Sox! (Ever try to catch a television image inside a steel railroad car using a built-in antenna, while traveling 70 miles an hour?) Any picture from anywhere would have been victory enough for die-hard DX radio



AMTRAK's, California Zephyr, on its scenic westward run.



Here's a room similar to the one the author did his scanning.

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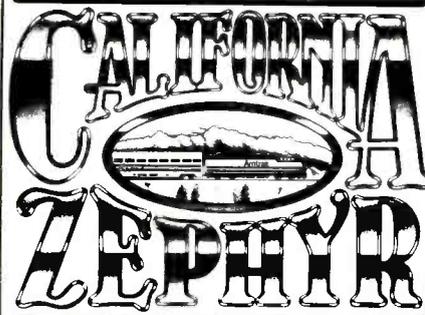


freaks, but the best was yet to come on the TV and the scanner.

As the train rolled into Iowa from Illinois, Sue called my attention to the interruption in the TV ballgame reporting "severe thunderstorm and tornado watch" announcements for eastern and central Iowa—right where our AMTRAK train was headed! Punched in the scanner WX (NOAA weather) button on our Bearcat 205XLT and heard the confirming warnings. And rain, thunder and lightning met up with the train.

The scanner joined us for dinner in the diner as the train confronted the storms, passing water logged fields and overflowing streams on both sides of the tracks. And AMTRAK slowed to a crawl. Conversations, captured on the scanner, between the engineer, conductor, brakeman and dispatchers on the ground revealed dangerous track washout fears. As the train pulled to a dead stop along the cornfields of Iowa, amid the lightning and torrential rain downpours, we monitored conversations of the crew as they walked a distance ahead of the train to check the condition of the track, looking for washouts or other dangerous conditions.

Falling asleep at home with our bedroom scanner (Regency Touch K100) purring all night is a regular occurrence—our scanner is never turned off—so listening to the Bear-



San Francisco * Salt Lake City * Chicago

The Desert Wind
Los Angeles * Salt Lake City

The Pioneer
Seattle * Salt Lake City

ROUTE ALL ABOARD AMTRAK GUIDE

cat in the AMTRAK sleeper made us feel right at home. (Scanner fans will be glad to know that sleeping compartments on AMTRAK have 110 volts AC current you may use as a battery charger, or battery eliminator.) The long day of travelling, railfanning, and scanning wore me out, and I fell asleep while Sue continued the monitoring watch. After sunrise, as the train passed through Nebraska, Sue explained what I had missed. The engine was in the hands of a new engineer, replacing our regular crewman who received a head injury in a freak accident with a forklift at Omaha. Sue had watched and heard the visit of the ambulance and fire trucks while I slept on in the upper berth!

This first part of the trip used scanning frequencies assigned to AMTRAK and to the Burlington Northern. But the westbound trip brought us into Colorado, past oil wells, ranches, deer, cows and horses, and alongside Interstate I-76 heading toward Denver—and the control of Denver and Rio Grande Western dispatchers. This gave me the opportunity to put 161.10 into a priority channel on the scanner in the first position of the 5th bank for more frequent scanning of an important road frequency.

All this would have been plenty for your average scanner listener, but there's more! Upon leaving Denver, AMTRAK continued

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2 receivers and auxiliary or active antenna. 'On' LED. 6x2x5 inches. Remote has 50 ft. coax and connector. 3x2x4 in. 12 VDC or 110 VAC with MFJ-1312, \$12.95



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MFJ-1020A Now you'll rival or exceed the reception of 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."

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toward the Rockies, and those spectacular views and tunnels you hear about. Over lunch in the diner, scanner by my side and earplug in place, more treacherous news was revealed: three locomotives are needed to haul the string of passenger cars over the mountains, and two of the engines on our train were malfunctioning! True, the train was slowing to a near-stop again. The engineer explained to the dispatcher that

one diesel-electric engine was "drawing 11 volts" and one of the other two wasn't working right. What to do? The discussing of alternatives brought no solution, other than for the Desert Wind (Hah!) to keep plugging ahead up the increasingly steep Rocky Mountain grades. The train crew somehow got us through the 29 tunnels, including the famous Moffat tunnel, but the engineer decided to "cool 'em down" after reporting

that we're "in the red" and overheating the single engine which was doing the work of three up the steepest mountain grades in America.

It was noon, and the AMTRAK train stopped near the top of the mountain to cool its only functioning engine because the "smell is really bad up here." The unscheduled break came as the train crossed the Continental Divide at 9,239 feet altitude. Another discussion was revealed over our scanner, revolving around how long a wait was required to provide an adequate period of rest to cool the locomotive. It was decided to "go by the Rio Grande rules which require a stop for 20 minutes." We waited and restarted, and the rest of the trip was all downhill. Although much of the power returned later, it was long after it wasn't needed as the train sailed through level desert country. Giving these passengers a little comfort, the conductor radioed the engineer, "OK. We'll make it OK." And they did. A real-life "Little Engine That Could" tale.

Scanner listeners hear another trackside audio treat on many railroads, including Union Pacific (which we monitored during the third phase of our trip). It is a train-reviewing system every few miles. A white light appears in a small box along the track as the train passes—visible to the crew—confirming that there is nothing dragging from the train cars, and no overheated axles (hotboxes). Concurrently, a computer voice announces over the radio, text similar to this: "UP Detector—Milepost 351—No Defects—Train Speed 79—Temperature 60—Think Safety—UP Detector Out." A pleasantly positive and confirming thought.

And after arriving in Las Vegas, the highlight for me wasn't the Excalibur or any lounge show, or casino—it was the view of the Union Pacific train yard from our window on the 14th floor of the Union Plaza Hotel—with the Bearcat scanner sharing rail-traffic chatter with me any time I needed the train/scanner fix.

My understanding of the use of railroad frequencies in scanning improved during the trip. Train frequencies took over most of the 200 storage locations in the Bearcat. By batching Burlington Northern, Rio Grande and Western, and Union Pacific frequencies into the ten banks of twenty frequencies, it was easy to lock out those not in use in the part of the country we were travelling through. This resulted in better access to those which were active.

Tips picked up through the years in "Popular Communications" helped, plus drawing upon my own collection of railroad frequencies.

I wouldn't have missed this Las Vegas vacation with Suzanne for the world, but neither of us would have enjoyed it nearly as much without a scanner by our side. As most scanner listeners would agree, don't leave home without it!

How long can I listen to that thing before it drives me crazy? How about 33 years . . . so far? ■

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Down & Dirty

In the murky world of the spy, hardly anything is as it seems. There are secrets, false identities, cover stories, lies, evasions, denials, and a constant undercurrent of conspiracy of threat and being discovered. Despite the dangers, for some people this world is undeniably attractive and exciting.

Tony Lesce's 179-page book, *Espionage: Down & Dirty*, is a dizzying ride through decades of lies so wild you'll wonder if the people at the top know what's going on. It shows how espionage agents are recruited, trained, and deployed. It explains how they are paid (not always with money), and how there are times the agents are the ones who pay—with their own lives. You'll find out the chain of events that triggers when an agent's cover is blown and he/she is discovered.

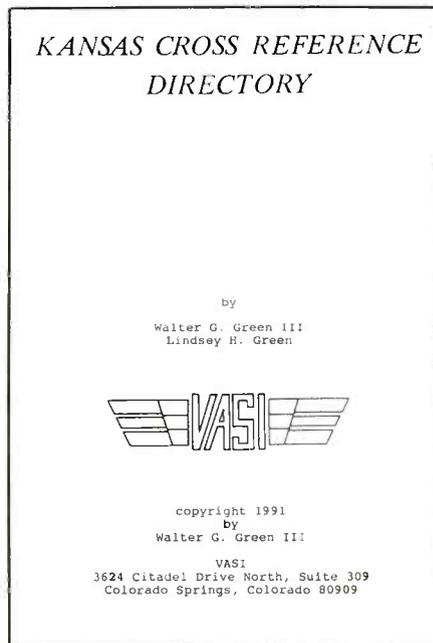


Throughout this book, you'll read about some of the spies in recent years who turned up in the headlines, like the Walker Spy Ring, British double-agent Kim Philby, the "Falcon" and the "Snowman," the Pollard case, the FBI's own Richard Miller, and dozens of others, including the strange case of Julius and Ethel Rosenberg (who many still believe were innocent of the 1950's charges that they stole American nuclear secrets).

Spying is hardly the glamorous, gadget-filled, glitter profession portrayed in many films and novels. Nevertheless, there is no shortage of mystery, danger, and intrigue in this world. If you want what seemed to us to

be a decent insight into the world of the professional espionage agent, *Espionage: Down & Dirty*, will interest you.

This book is \$17.95, plus \$3.00 for shipping, from Loompanics Unlimited, P.O. Box 1197, Port Townsend, WA 98368. Residents of WA State add 7.8% sales tax.



Grid Cross Reference

Kansas was the first state selected for what is projected to be a total of 50 volumes of location references covering the USA in great detail. The purpose of the series is to assist all communicators, weather monitors, emergency responders, ham operators, and others. It provides cross reference of counties, communities, highways, interstates, search and rescue grids, and ham radio grids.

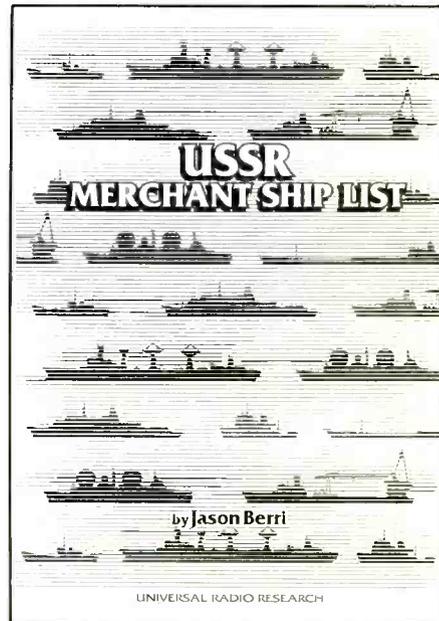
The grid locators in the publication relate to standard references, such as aeronautical sectional charts, ARRL grid locator, etc.

The Kansas edition is 147-pages, comb bound. Directories for Colorado, Nebraska, and Utah will probably also be available by the time you read this. These worthwhile publications are \$22.95 each, postpaid.

They may be ordered from VASI, 3624 Citadel Drive North, Suite 309, Colorado Springs, CO 80909.

USSR Merchant Ship Directory

What with having a large merchant fleet deployed around the globe, ute monitors know that many of the callsigns discovered



on the CW and RTTY maritime frequencies belong to Soviet ships. While it's interesting to monitor this traffic, it isn't easy for most listeners to accurately match up the callsigns monitored with specific vessels.

The 4th Edition of Jason Berri's *USSR Merchant Ship List* is a 71-page reference publication that is a comprehensive guide to solving this problem. It offers valuable information on identifying 1,100 Soviet merchant vessels, giving their call letters, names, home ports, serial number, and ship type. Listings are by callsign, cross referenced by ship name and serial number. A listing of presently inactive vessels is also given.

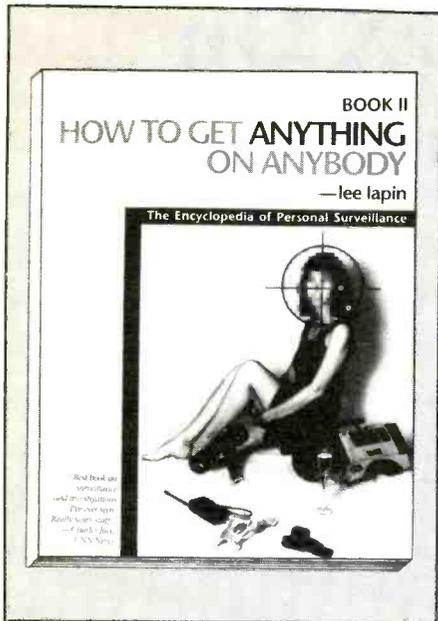
In addition, much useful general information is provided on monitoring the Soviet merchant fleet, including frequencies, message formats, etc.

This is a well-prepared book that should be useful to all ute monitors. It is \$10.95, plus \$1.00 shipping, from Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068.

This About Has It All

A couple of years ago, Lee Lapin wrote his now-legendary book, *How To Get Anything On Anybody*. It quickly became the foremost encyclopedia of personal surveillance. Now, with many techniques having been recently developed, and plenty of new snooping hardware having been developed, Lee has finally dropped the other shoe with a big 224-page illustrated follow-up book, *How To Get Anything On Anybody, Book II*.

This book doesn't replace his earlier work, it provides lots more information, with very



heavy emphasis on electronic surveillance. As the author points out, whether you're the hunter or the hunted, this information will not only fascinate, but be of genuine practical value.

This very thorough book deals with topics such as audio snooping; accessible high level bugs and taps; recorders; listening through walls; scanners and other receivers; the phone company; obtaining confidential phone company information; car phone intercepts; video surveillance; computer cracking, hacking, and phreaking; and many more subjects. Techniques, equipment, methods, shortcuts, trip-ups, legal aspects, and step-by-step instructions abound throughout this book. There are plenty of photos, too.

A special section covers information tracking. That means, how to trace, track, and dig out credit histories, DMV records, marriage records, and other vital personal information held in databases on virtually everyone in the USA.

Lee ends up with a gigantic listing of more than 200 reliable suppliers of quality surveillance and countermeasures equipment. Gives addresses, plus a description of what they have to offer.

No doubt about it, Lee Lapin opened many doors (and a couple of cans of worms) in *How To Get Anything On Anybody, Book II*. It is written so that it's easy to understand and also ready to put to practical use. And Lapin's writing style is quick, clever, and often sprinkled with wit. A winning book, in every respect.

How To Get Anything On Anybody, Book II, is available for \$34.95, plus \$3.50 for UPS shipping (sent First Class Mail to addresses to in AK, HI, PR, VI, APO, FPO, and Canada) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State, please add \$3.08 sales tax. ■

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- Either model \$79.95
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"The best...built like an antenna should be." -Larry Magne in *World Radio TV Handbook*

"Our best seller." -EEB in their recent ads and catalogs

"New in use in 45 countries." -Giffert Shortwave in 1983

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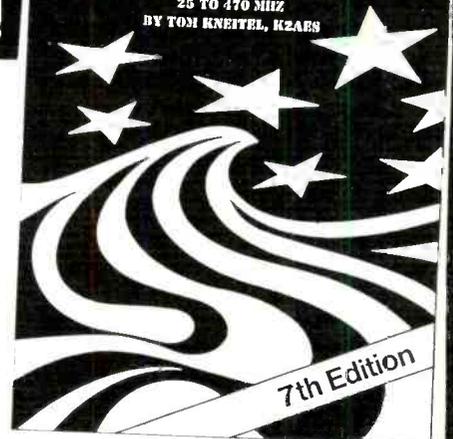
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Broadcast Band DX On A \$50.00 Walkman Radio!

It Can Be Done! Try It!

BY TONY BERNHOFFER

When I first became interested in DX as a hobby, I bought a \$250.00 shortwave portable with PLL circuitry and ECSS. I set my sights on a \$1500.00 communications receiver with an array of halfwave antennas in the backyard. I had grand hopes of hearing from a 1 kW broadcaster in Sri Lanka and receiving a verification card as a prized souvenir.

That was over four years ago. Along with many other Americans, I have had to set my standards a little lower. So when the repairman informed me that my \$250.00 shortwave portable was beyond his ability to repair, I used it for three months and then threw it into the garbage can!

What was I to do? I had schedules, antennas, handbooks, but no money for a \$350.00 portable radio—yet alone the \$1500.00 receiver I had been dreaming of.

It seemed as though the quality and sensitivity of my world band receiver had so badly deteriorated that I began comparing its performance of its reception of Detroit 950 kHz AM all news radio to that of the AM/FM radio in my mom's car!

So the scientist in me decided to conduct a small experiment just for fun. How much can I possibly hear on a Walkman AM/FM stereo cassette \$50.00 portable? I decided

to keep a log for one month and send reception reports to the commercial AM broadcasters here in the good ol' U.S.A.

From my home in Toledo, Ohio, which is 50 miles away from Detroit, Michigan, I could hear 50 kW radio station WWL in New Orleans on 870 KHz over 870 miles away! In general, I could hear 50,000 watt commercial AM broadcasts from Chicago, Des Moines, Philadelphia, New York City and Boston, among others. 50,000 watts is the maximum power limit for commercial broadcasters here in the U.S.A. on the mediumwave 500-1600 KHz band.

It was not your basic casual FM stereo listening, however! I found that the signals were extremely faint. The propagation was very poor. Sometimes I heard two stations coming in from opposite directions at the same time. Other times, the signal would disappear for 30 seconds to 10 minutes! And there sure was plenty of static. Very similar to DX'ing low power shortwave stations.

On a \$150.00 used portable, I saw how much more efficient a carrier shortwave is. On November 14, 1990, I heard a faint signal from 50,000 watt KOA in Denver, Colorado. I rated it a poor quality signal on 850 KHz. Compare it to WWV on 10,000 KHz.

NETWORK HEADQUARTERS		
WCBS	880 KHz	New York City
WABC	770 KHz	New York City
WMAQ	670 KHz	NBC - Chicago
ALL NEWS		
KYW	1060 KHz	Philadelphia - Group W
WWL	870 KHz	New Orleans
WWJ	950 KHz	Detroit
WGY	810 KHz	Schenectady
SPECIALTY STATIONS		
WFAN	660 KHz	New York City - All Sports
WQXR	1560 KHz	New York Times

It has 10,000 watts of power: yet it is a strong signal. It is 1/3 the power of KOA, yet the reception is 2 signal units stronger. Both KOA and WWV are approximately 1100 miles away from Toledo.

AM Commercial Radio Is Not Dead!

During high school, I stopped listening to AM radio because of all of the annoying commercials. I turned to FM stereo. When

WJR (left) and WSM (right) acknowledge the author's reception report.

Tony Bernhoffer
A Capital Cities/ABC, Inc.
Owned Station



2100 Fisher Building Detroit, Michigan 48202

50,000 Watts 760 khz AM Stereo

Transmitter located at Riverview, Michigan
Lat. 42° 10' 07" N
Long. 83° 13' 00" W
24 hour operation
Ant. 195' Vertical
700 ft. high, nondirectional.

Confirming your report of reception
on 11/3/90 at 6:46 - 7:18 PM

Your report is appreciated and welcome.
Ed Buterbaugh Gary Berkowitz
Director of Engineering Operations Manager

Wsm RADIO 650 10/22/90

7644 McGavock Pike, Nashville, TN 37214 WSM signed on the air on October 5, 1925. WSM is the home of the Grand Ole Opry and the flagship station for the Music Country Radio Network and operates as a Class 1 A Clear Channel station with a full-time power of 50,000 watts utilizing a non-directional antenna. WSM AM is a pioneer in AM Stereo broadcasting and utilizes the Motorola C-Quam system.

* CONFIRMING YOUR RECEPTION REPORT OF: 10/8/90

Thanks for your reception report and your interest in WSM. We hope you'll tune in to AM/650 whenever conditions permit.

Tom Bryant
Tom Bryant/Production Manager



TO: Mr. Tony Bernhoffer

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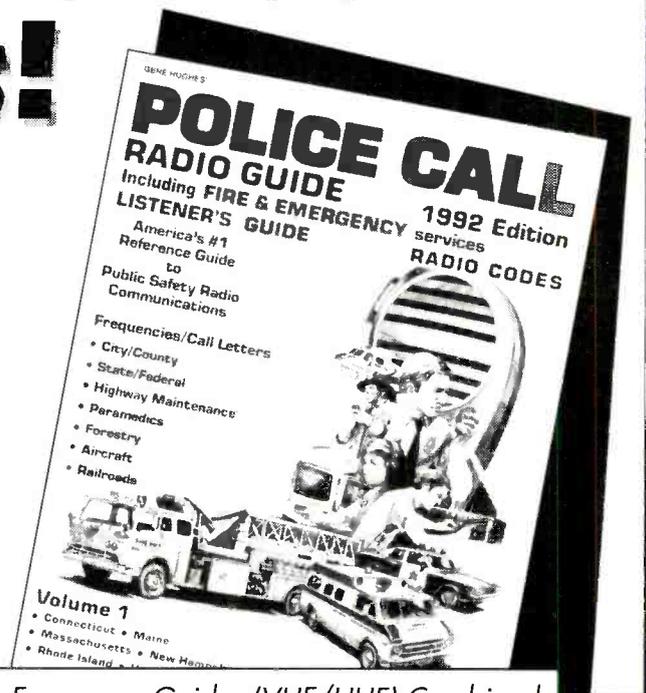
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CIRCLE 81 ON READER SERVICE CARD



This will acknowledge your reception of our station. 11-6-90 Thank you.

- 50,000 Watts
- 1040 KHz

Transmitter: Harris MW-50-A
 Radiator: 745' Modified Franklin
 Latitude: 41° 39' 12"
 Longitude: 93° 20' 56"

Over 60 Years of Service

Here's a QSL from 1040 WHO in Des Moines.



NASHVILLE, TENNESSEE
U.S.A.

A bumper sticker from WSM.

FM stereo became too commercial, I began listening to shortwave radio.

From the standpoint of the DX enthusiast, I found satisfaction in the network of "All News Radio" stations. They broadcast news story headlines continuously. I found that the networks CBS, NBC and ABC each held "all news" broadcasts originating from their headquarters. The New York Times owns a radio station, and Westinghouse owns a network of Group W radio stations.

From my sampling of radio, I heard a diverse spectrum of entertainment:

On September 14, 1990, KOA in Denver, Colorado (850 KHz) carried a radio

telethon raising money to have Saddam Hussein killed. (10:00-11:00 p.m. EST)

On November 15, 1990, WWVA in Wheeling, West Virginia carried old time evangelical "fire and brimstone" gospel programming, as well as the local coal mine's midnight shift work schedule. (1170 KHz: 9:30-1:00 p.m. EST)

On November 6, 1990, WHO in Des Moines, Iowa carried Election '90 coverage with live reports coming from the headquarters of candidates for Governor and Senate. (1040 KHz: 10:45-11:35 p.m. EST)

On October 20, 1990, WBZ, Boston, Massachusetts. Analysis of Democratic par-

ty in Massachusetts before the Silber-Weld debate in the governor's race. (1030 KHz: 7:00-7:30 p.m. EST)

On October 6, 1990, Radio Progreso, Havana, Cuba. Lively Latin music. (650 KHz: 9:30-10:00 p.m.)

On October 8, 1990, WSM, Nashville, Tennessee. Home of the Grand Old Opry. Country Music Awards coverage. (650 KHz: 9:00 p.m.-11:00 p.m. EST)

And, of course, the famous AM broadcasters like WJR (760 KHz) Detroit, KDKA (1020 KHz) Pittsburgh, PA, and WOR (710 KHz) New York City can still be heard in the evening hours in the Midwest. ■

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Look for Canada to get a new shortwave station sometime down the pike—probably in a couple of years. The North American Broadcasting Company has plans to put a pair of 250 kW transmitters on the air from Morden, about 80 miles southwest of Winnipeg. You're not likely to hear anything Canadian on this proposed station, though. The station would just rent time to other international broadcasters who would use it as a relay to put better signals into the United States.

The Voice of Israel has dropped its English broadcasts to North America as a money saving measure. The station still airs some English programming: 1330-1400, 1700-1715, 1900-1930 and 2100-2130 on many of the usual frequencies.

Turkey also dropped its North America service on 9445 but this was just a temporary thing while new facilities were being installed. The Voice of Turkey's English to North America transmissions may very well be back on the air by the time you read this. If not, look for them soon.

After a long absence from the international bands the Philippines government station Radio Filipinas/Philippines Broadcasting Service is back on shortwave. It is airing English, although not at the most appropriate times and frequencies for reception in North America. One broadcast is at 0200-0330 on 17840 and 21580, another begins at 1800 on 15190, 17840 and 21580.

Keep an ear on the 120 meter band. There's word that Radio Havana Cuba may open up a one kW channel somewhere in this band just for DX'ers.

Adventist World Radio celebrated its 20th anniversary last October and as part of the celebration has re-issued its first QSL card. It's available for a limited time in response to reception reports on any of the AWR stations.

AWR Latin America (Costa Rica) should have its new transmitters on the air by now—the old Radio Impacto units. Frequencies used are 5030, 5970, 6150, 9725, 11870, 13750 and 15460.

Radio France International will be putting three 500 kW transmitters on the air from Djibouti to be used as an RFI relay. That will make this difficult country much easier to receive, but it'll be three years before the entire complex is completed (first transmissions will probably be earlier than that, though).

In another of the many still hard to believe aspects of radio and the end of the cold war RFI is now being aired over the shortwave frequencies of Radio Budapest, Hungary. RFI to Africa can be heard via Budapest at 0500-0600 on 11850, 0500-0800 on 17690 and 0600-0800 on 15530.

RADIO FINLAND IN NORTH AMERICA

valid until March 30, 1992

MORNING TRANSMISSIONS:

on 21 550 kHz in the 13 meterband (21 MHz)
on 15 400 kHz in the 19 meterband (15 MHz)

07.00 am — 10 am EST*
06.00 am — 9 am CST
05.00 am — 8 am MST
04.00 am — 7 am PST

English language programming beginning at 07.30 am, 08.30 am and 09.30 am EST Mondays through Fridays - on Saturdays and Sundays from 09.00 to 10.00 EST. At other times programs in Finnish and Swedish. * The frequency of 21 550 kHz is not available until 08.00 am EST.

EVENING TRANSMISSIONS:

on 11 775 kHz in the 25 meterband (11 MHz)
on 9 560 kHz in the 31 meterband (9 MHz)

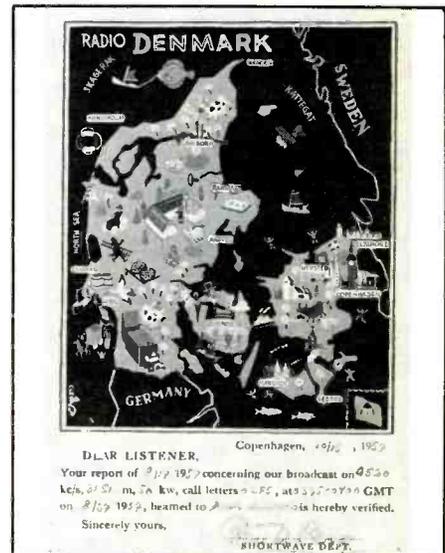
9.30 pm — 11.20 pm EST
8.30 pm — 10.20 pm CST
7.30 pm — 09.20 pm MST
6.30 pm — 08.20 pm PDT

Programs in English at 9.30 pm EST, followed by programs in French (09.50 - 10.05 pm EST). At other times Finnish and Swedish.

A schedule from Radio Finland International is about as close as you can get to a QSL from this station these days.

In the same vein, Deutsche Welle is using former USSR jamming transmitters to broadcast to Asia in German and several other languages, totalling 19 and half hours a day.

The Organization of African States should have a station on the air from Addis Ababa, Ethiopia, sometime this spring or summer.



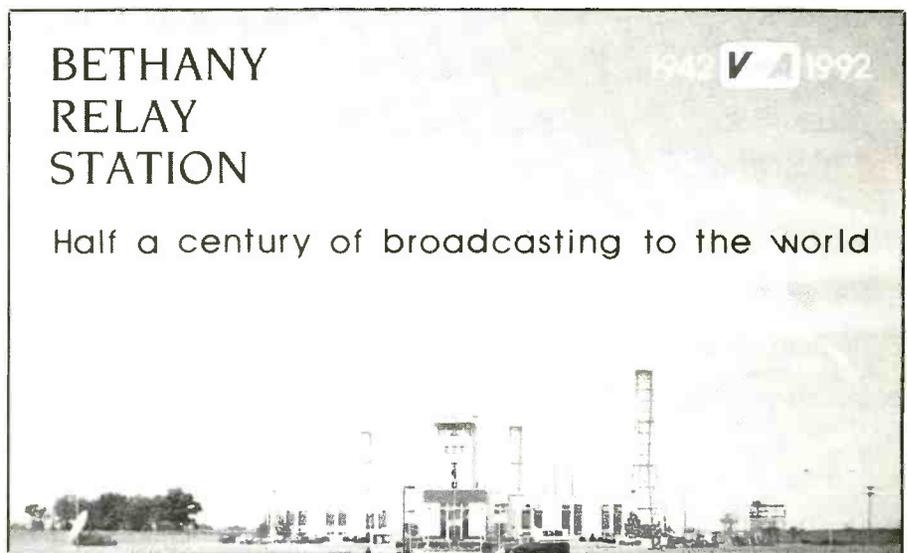
There was a time, decades ago, when Radio Denmark not only had an English broadcast to North America (they have no English now) but sent attractive QSL cards (they don't QSL at all now).

It will broadcast in several languages, including English. It's purpose is to combat what is seen as too much negative reporting about Africa in the world's media. We'll pass along details on frequencies and schedule for this one as soon as they're available.

Radio Kuwait will probably be back on

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The Voice of America is celebrating the 50th anniversary of the Bethany Ohio transmitter with a special QSL card. Reception reports should be sent to VOA Bethany Relay station, PO Box 227, Mason, OH 45040.

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RADIO EXTERIOR DE ESPAÑA

Spanish National Radio's shortwave service covers big chunks of the world.

shortwave in just as few more months but probably not at its former strength levels. The station was badly damaged in the war and it's expected to be a couple of years before full broadcasting capacity is reached.

Here's some very welcome news. According to Radio Netherlands Media Network, Radio Maldives in the Maldivian Islands says they plan to return to shortwave broadcasting, providing a service to neighboring countries. This one will very likely be just as hard to log as it was when it was active many years ago, but at least we'll have a fighting chance again!

It's Winter SWL Fest Time: Here's a great way to beat the winter blahs, talk all kinds of radio, pick up all kinds of useful information, meet a lot of neat people and, in general just have a good time. The 5th annual SWL WinterFest is scheduled for March 13-15 in Kulpsville, Pennsylvania, about 45 minutes from Philadelphia. Talks and seminars will cover many aspects of shortwave listening. For full details send a self addressed, stamped envelope to SWL Fest, PO Box 591, Colmar, PA 18915. Also check the SWL Ham Net Sundays at 10AM EST on 7240 lower sideband.

Mail Call: C. A. Rathbun, Jr. of Arp, Texas is new to the hobby and has progressed from home-built receiver to a DX-440. He wonders what the SINPO reporting code is all about. It's a shorthand method of reporting on various aspects of reception quality. It's

a 1 to 5 rating for Signal Strength, Interference, Noise (static), Propagation (fading), and Overall quality. One is bad (extremely weak, very strong interference, etc and five is excellent, no interference, etc).

J.M "Jack" Bumbeck of Missouli, Montana says he's been DX'ing for 23 years, originally with an RCA "Strato-World" receiver. Currently he's using a Sony 2010. Jack says people who aren't into shortwave are really missing a lot. You're sure right about that, Jack.

Daryl E. Rocker in Frankfort, NY also added a 2010 recently and says he's really pleased with it. Daryl promises a shack photo soon and we look forward to that. We need more of you to send photos!

Bob Christian in Livingston, Louisiana is celebrating 25 years behind the dials. He has an old Zenith Transoceanic, plus Realistic DX 150A and 440. Bob says that, since he has plenty of room for antennas he is always experimenting, looking for the ideal set-up. The Voice of the Mediterranean, Bob, can be reached via PO Box 143, Valetta, Malta.

It was the Gulf War which turned Marie Lamb in Brewerton, NY on to shortwave. Marie had played with a couple of inexpensive sets her father had around the house when she was a girl but never got serious about it until she wanted to hear war coverage from the BBC. She's been DX'ing, ever since—writing to stations, getting QSLs and enjoying getting mentioned on the air. She was recently interviewed on Herald Broadcasting's "Letterbox" program.

Mike Martin of Monroe, IA says he's recently gotten back into shortwave after having been inactive for a few years. He'd like to correspond with other DX'ers. You can write to Mike at RR2, Box 98, Monroe, IA 50170.

Remember, your correspondence is always welcome. Log reports should be listed by country, double or triple spaced between items and should include your last name and state abbreviation after each item. Comments, questions, schedules, spare QSL cards you don't need returned, and shack photos are all welcome.

Here are this month's logs. Broadcast language is assumed to be English (EE) unless otherwise noted. FF = French, GG = German, etc. All times are UTC.

SWBC Loggings

Albania: Radio Tirana, 7300//9760, tentative at 0043. (Moser, PA) 9580 with news at 0330. (Tucker, GA)
Algeria: Radio Algiers at 2025 on 9535. (Rocker, NY) 15205 at 2045 with mideast news, AA, heavily QRM'd. (Moser, PA)
Antigua: BBC relay, 5975 at 2307. (Moser, PA)
Deutsche Welle: relay, 6040 at 0103. (Moser, PA)
Ascension Island: BBC African service, 9600 at 0438. (Lamb, NY) 15400 at 0823. (Moser, PA)
Australia: ABC. 9660 at 0845. (Borsche, IL) Radio Australia, 5995 at 1215 and 6080 at 1225. (Northrup, MO) 9580 at 1242. (Moser, PA) 11720 at 1519. (Prudoni, ON) //12000 at 1427. 15160 at 0510 and 17795 at 0402. (Carson, OK) 15240 at 0648. (Lamb, NY) 17715 at 0505. (Martin, IA) 17630 at 1347. (Tucker, GA) 21750 at 0250. (Rocker, NY)
Austria: Radio Austria International, 6015 (via Canada, editor) at 0530. (Seefeldt, WI) 9875 at 0130. (Tuck-

Abbreviation Used in Listening Post

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

er, GA) 13730 at 0129. (Martin, IA) 21490 at 1624 in GG, into EE at 1630. (Moser, PA)

Belgium: BRT on 13625 at 1105 in Dutch. (Moser, PA) 13655 at 2340 with classical music. (Carson, OK)

Benin: ORTB Cotonou, 4870 in FF at 0505 with singing. (Moser, PA)

Botswana: Radio Botswana, 7255 at 0246 with IS. (Moser, PA)

Brazil: Swiss Radio via Radiobras transmitter, 17730 at 0229 ending EE, into SS. (Carson, NM)

Radio Super, Roraima, 4875 at 0521 with Brazilian and US pops. PP. (Lamb, NY)

Radio Anhanguera, 4915 at 0357 with Brazilian music, PP ID. (Lamb, NY)

Radio Cultura do Para, 5045 in PP at 0236 with pop music and sign off. (Lamb, NY)

Bulgaria: Radio Sofia, 9700//11600 (best)//15370 at 2144 with IS, sign on, news. (Moser, PA) 11660 at 2152. (Prudoni, ON) 15160 at 0259 with IS, ID, news. (Lamb, NY) 17825 at 2225. (Rocker, NY)

Cameron: CRTV, Yaounde, 4850 at 0503 with news. (Lamb, NY)

Canada: Radio Canada International, 9635 with domestic program "As It Happens" at 1208. (Tucker, GA) 11905 at 2225. (Norman, Carson) 17875 at 2140 "Quirks and Quarks." (Carson, OK)

Radio Japan relay, 5960 at 0101 with news. (Moser, PA)

Radio Korea relay 11715 at 1031 with news. (Moser, PA)

Chile: Radio Nacional, 15140 at 1917 in SS with music. (Moser, PA)

China: Radio Beijing, via Mali on 9770 at 0000. (Tucker, GA) 11500 at 2151 with ID. (Moser, PA) 11685 at 0450. (Carson, NM) 17705 at 0020. (Carson, OK) 15285 at 0310. (Rocker, NY)

Colombia: Caracol Bogota, in SS at 0701. (Bednarski, BC) 0800 with music, into news, ID. (Moser, PA) Caracol Neiva at 0800 with news in SS, Colombian songs. (Barry, CA) 0833 "Sentila" commercial, promo for program "Progressive Negra," numerous IDs and much talk. (Gasque, SC)

Ecos del Combeima, 4785.9 at 0232 with references to the Super network. soccer play-by-play in SS. (Gasque, SC)

Ondas del Meta, 4884.9 with mostly SS talk, ID 1053. (Gasque, SC)

Ecos del Atrato, 5020 at 0157 with references to the Caracol network, almost continuous music except for short SS IDs after each song. (Gasque, SC)

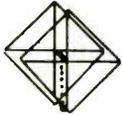
La Voz del Rio Arauca, 4895 at 1044. several IDs, possible local news in SS, many references to Colombia, Arauca. (Gasque, SC)

La Voz del Llano, 6115.8 at 0915 in SS. "Momento de reflection," references to Bogota, Colombia. Economics program "La Hacienda" at 0949. (Gasque, SC)

Congo: RTV Congolaise, 15190 in FF at 1600 with music. (Barry, CA)

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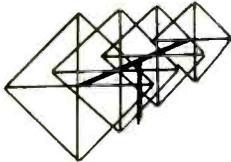
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Costa Rica: Radio For Peace International, 5030//13630 at 0156. (Carson, OK) 7375USB at 0233 with Red Cross program. (Lamb, NY) 7376//13630 at 0300 with human rights talk. (Christian, LA) 21465 at 2310. (Rocker, NY)

Adventist World Radio, 9725 at 1220 and 2355. (Carson, OK)

Radio Reloj, 6006 at 0640 in SS with Latin music, IDs, time checks. Quick verifier. (Lamb, NY) (Not in the "olden days" they weren't editor)

Faro del Caribe, 5055 with EE religion at 0307. Also in SS at 1019 with ID and rooster crows between music selections. (Gasque, SC)

Cuba: Radio Rebelde, 3365 at 0052 with Latin music, news in SS. (Lamb, NY) 5025 in SS at 1046. (Moser, PA) Radio Havana Cuba, 9620 at 0201 and 15105 at 0650, both in SS. (Barry, CA) 11760 at 0630. (Christian, LA) 11950 at 0330 with news. (Seefeldt, WI) 17705 at 1900 with news. (Tucker, GA)

Czechoslovakia: Radio Prague International, 5930//7345 at 0100 with sign on in EE. (Martin, IA) 7345 at 0424. (Bumbeck, MT)

Denmark: Radio Denmark, 11865 via Radio Norway, EE ID at 2357. (Vaage, CA)

Dominican Republic: Radio Norte (aka "La N," editor) 4800 with Latin music, SS. ID tentative. (Moser, PA)

Ecuador: HCJB, 6050 at 0429 in SS with classical and easy listening music. (Lamb, NY) 6110 in Quecha at 0905 and 11835 in EE at 0805. (Barry, CA) 9745 at 0320. (Seefeldt, WI) 15115 at 1432. (Moser, PA) 15155 at 0040 in EE and 17875 in JJ at 2200. (Carson, OK) 21455 USB at 0115. (Rocker, NY)

La Voz de Upano, 5040 at 0228 in SS with Latin and US music. (Lamb, NY)

HD2IOA time station, 7600 at 0433 with time pips and SS announcements each minute. (Lamb, NY)

Egypt: Radio Cairo, 9475 at 0244 with news. (Rocker, NY) 9900 at 0330 in AA. (Bumbeck, MT)

England: BBC, 3955 at 0545. (Rocker, NY) 5975 and 6175 at 0319. (Seefeldt, WI) 6195//12095 at 1326. (Carson, OK) 7325 at 0429 with IS. (Lamb, WI) 13660 at 2130 with "Calling the Falklands." (21470 via Cyprus at 1314. (Tucker, GA)

Voice of America, via Woolferton, 7325 at 0604. (Moser, PA)

Estonia: Radio Tallinn, 5925 at 0903 in believed Swedish. Poor signal, tentative ID. (Moser, PA)

Finland: Radio Finland International, 15185 at 2308 with program about art. (Martin, IA) 15400 at 1340. (Rocker, NY)

France: Radio France International, 4890, via Gabon, at 0422 with news in FF. (Lamb, NY) 7280//6175 at 0509 in FF to Europe. (Moser, PA) 9800 at 0500 in SS. (Bednarski, BC) 21645 in FF at 1552. (Prudori, ON)

French Guinea: RFO Guyane, 5055 in FF at 0547 with talk show and news. (Lamb, NY)

Radio Japan relay, 15325 at 0300, news and JJ lesson. (Lamb, NY)

RFI relay, 15200 at 0053 in PP, into SS at 0100. (Moser, PA)

Gabon: Radio Japan relay, 11735 at 2315. (Carson, OK)

Africa No. One, 9580 at 2015 with music, man in FF. (Moser, PA) 0527 in FF with African music. (Lamb, NY)

Germany: Bayerischer Rundfunk, 6085 at 0208 in GG. (Tucker, GA) 0147 in GG with pop music, IS and ID at 0258 just before DW signs on from the Sackville relay. (Lamb, NY)

Sudwestfunk, 7265 at 0540 with rock, news, ID in GG. (Lamb, NY)

Deutsche Welle, 6040//9565 (both via Antigua) at 0105. (Rocker, NY) 6145 at 0104. (Moser, PA) 7130 at 0143 (in GG) and 9670 at 0536. (Carson, OK)

Ghana: Ghana Broadcasting Corp., 4915 at 0559 with drums and sign on, ID by woman, news in EE. (Moser, PA)

Greece: Voice of Greece, 9395 at 0330, EE ID "This is Athens" at 0340, into EE news. (Gasque, SC) //9420 and 11645 at 0055 with Greek music. (Moser, PA)

Guam: KTWR, 11805 at 0820 with news of religion in Africa. (Moser, PA) 0915 with religion. (Christian, LA)

Guatemala: TGNA/Radio Cultural, 3300 at 0205 with religious music, sermon, ID 0230 and "Back to the Bible." (Gasque, SC)

Radio Tezulutlan, 4835 at 1102 to ID in SS or indian language at 1132. (Gasque, SC)

Guinea: RTG, Conakry, 0428 with IS, national anthem, African music, FF. (Lamb, NY)

Hawaii: WWVH, 10000 with time signals at 0500; 0912. (Seefeldt, WI; Moser, PA)

Honduras: La Voz del Junco, 6075 in SS with lots of sambas, IDs and commercials from 1145-1200. (Gasque, SC)

La Voz Evangelica, HRVC, 4820 at 0154 in SS. (Moser, PA) 0438. (Bednarski, BC)

Hungary: Radio Budapest, 11910 at 0150 in presumed Hungarian. Into EE at 0200. (Moser, PA) 0230. (Rocker, NY)

Iceland: INBS, 15770 at 1936 with woman, man in Icelandic, some music, no ID. (Moser, PA)

India: All India Radio, 11620 at 1845. (Borsch, IL) 1913. (Moser, PA)

Iran: VOI/RI, 9480 at 2130 with news. (Rocker, NY)

Israel: Kol Israel, 11587 at 1800 with news. (Rocker, NY) 15617 at 1930 in Hebrew with relay of Reshet Bet domestic service. (Lamb, NY) 15640 at 2141. (Prudori, ON) 17685 at 2153 with news reviews. (Carson, NM)

Italy: RAI domestic service on 6060 at 0132 with classical and Italian pops, news in Italian, EE, FF, GG from 0200. 9575//11800 EE to North America at 0100 with news and Italian music. (Lamb, NY)

Japan: JYJ time station, 8000 at 1149 with time signals. (Moser, PA)

Radio Japan, 5960 via Canada at 0135. (Rocker, NY) 9505 at 1755. (Foss, AK) 9675 at 0820 and 9760 at 0555. (Barry, CA) 11815 at 1710 with news. (Martin, IA)

Jordan: Radio Jordan, 11940 at 1918; woman in AA. (Moser, PA)

Lithuania: Radio Vilnius, 11790 at 2305 with news. (Rocker, NY) 15485 at 0100. (Tucker, GA) 15180//17690 at 2302. (Moser, PA)

Luxembourg: Radio Luxembourg, 15350 at 1615 with music. (Moser, PA)

Madagascar: Radio Netherlands relay, 11955 at 1424 in Dutch. (Carson, OK) 17575 at 1132 with "Happy Station" program. (Moser, PA)

Malta: Voice of the Mediterranean, 9765 at 0600 sign on. (Borsch, IL) 0605. (Christian, LA)

Deutsche Welle relay, 11865 at 0105 with news. (Moser, PA)

Mali: Radio Beijing relay on 9770//11715 at 0033. (Moser, PA)

Mauritania: ORTM, 4845 at 0657. Man in AA, ID at 0700. music. (Moser, PA)

Mexico: Radio Educacion, 6185 in SS at 0845 with drama, ID at 0851 over John Coltrane tune, then classical music. (Gasque, SC)

Monaco: Trans World Radio, 9480 at 0635 with IS and "Evidence" religious program. (Lamb, NY) 0640 with British religious program. (Martin, IA)

Morocco: RTV Marocaine, 15105//15335 at 2105 in AA. (Moser, PA)

Netherlands: Radio Netherlands, 6020 at 0055 with Happy Station. (Carson, OK)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0340. (Seefeldt, WI) 17605 at 1950. (Carson, OK)

Trans World Radio, 9535//11930 at 0330. (Rocker, NY) 11815 at 1130. (Carson, OK) 15345 at 1300. (Moser, PA)

New Zealand: Print Disabled Radio, 3945, weak in EE at 0639. (Foss, AK)

Radio New Zealand, 9700 at 0742 with "Saturday Night" (Moser, PA) 1155 with weather, frequencies, close. (Carson, NM) 17700 at 0510. (Martin, IA) 0430. (Bumbeck, MT)

Nigeria: Voice of Nigeria, 0448 with IS of bells and talking drums, 0500 "Morning Flight" program. (Carson, NM) Nigerian news at 0553. (Moser, PA)

Northern Marianas: KHBI, 15200 at 0915 with religious talk, singing. (Moser, PA)

North Korea: Radio Pyongyang, 9560 at 0956 in JJ. (Foss, AK) 9977//11335 at 1118 with music, woman in EE. (Moser, PA)

Norway: Radio Norway International, 11815 at 0429. (Bumbeck MT) 2307 with EE ID, news in Norwegian. (Vaage, CA)

Paraguay: Radio Nacional, 9735 in SS at 2312, 0135; 0830. (Moser, PA; Barry, CA; Martin, IA)

Peru: Radio Union, 6115 in SS at 0850 with Andean music (Barry, CA) 0858 with ID, music. (Gasque, SC) 0508 with Latin pops and frequent IDs. A tip on QSL'ing this one—the verification signer is a stamp collector. (Lamb, NY)

Radio Cora del Peru, 4914.7 in SS, with ID at 1130 and 1133, mostly talk. (Gasque, SC)

Radio Ancash, 4990.7 with IDs at 1027 and 1034, references to Lima. Strong QRM from Ecos del Torbes-4980. (Gasque, SC)

Radio Eco, 5097.5 0955 with music, ID 0957. CW QRM. (Gasque, SC)

Philippines: VOA Poro relay at 1146. Tentative on the site. (Moser, PA) 1202-1210. (Gasque, SC)
FEBC, 11685 at 1308 with EE news. (Carson, OK) 1330. (Christian, LA)

Poland: Radio Polonia, 9765 at 0625 with man, woman in FF, ID 0628, piano IS, EE at 0630. Better than parallel 7270. (Moser, PA)

Portugal: Radio Portugal, 9555 at 0235. (Rocker, NY) 11800 at 0830 with ID at PP. (Moser, PA)

Qatar: Qatar Broadcasting Service, 21555 at 1641 in AA with mideast music, woman announcer, ID "Qatar min al Doha." (Moser, PA)

Romania: Radio Romania International, 9510 at 0124 in PP, into Romanian at 0130. 11940 at 0359. (Carson, OK) 9570 at 0158; 0401. (Martin, IA; Bumbeck, MT)

Rwanda: Deutsche Welle Kigali relay on 15410 at 1056, barely audible IS. (Moser, PA)

Saudi Arabia: BSKSA at 1225 in AA on 21505. No ID. (Northrup, MO) 1515 in AA, Holy Qu'ran. (Carson, OK)

Seychelles: FEBA Radio, 15445 at 1227 with music, Hong Kong address, FEBA ID 1245. (Lytle, TX)

BBC relay. 15420 at 1140. (Moser, PA)

Singapore: BBC Far Eastern Relay, 9740 at 1141. (Moser, PA)

South Africa: Radio RSA, 7270 at 0403 with news. (Moser, PA) 11920 at 0255 with IS, anthem, sign on, news in FF. 15365 at 1350 in Swahili, IS, EE ID, anthem, into Swahili service. (Carson, OK) 15210 with IS at 1455, ID, anthem, ID, frequencies, woman with news. (Gasque, SC) 15440 at 0400. (Borsche, IL)

Radio Orion, 3320 at 0218 in EE with pop music, IDs. Into Radio South Africa at 0300 with anthem and easy listening music. (Lamb, NY)

South Korea: Radio Korea, 7275 at 1012 in KK. (Foss, AK) 9750 at 1220 with news. (Moser, PA) 15575 at 1645 starting AA service. (Carson, NM) 1759 with IS, ID, news. (Lamb, NY)

Spain: Spanish National Radio, 9630 at 0109. (Rocker, NY) 11730 in SS at 0642. (Foss, AK)

Sri Lanka: SLBC on 11835 at 1050 with woman in EE, music. (Moser, PA)

Sweden: Radio Sweden, 9695 at 0340. (Martin, IA) 11705 at 0200. (Moser, PA) 17870 at 1530 with "Sweden Calling DX'ers." (Rocker, NY) 21500 at 1547 with ID, address, Nordic sports. Off at 1558. (Gasque, SC)

Switzerland: Red Cross Broadcasting Service, via SRI facilities, 6135 at 0320. (Tucker, GA)

Swiss Radio International, 9885 at 0425 in EE, into German at 0430. (Carson, OK) 22955//12035//13635//15525 at 1934 in FF. (Moser, PA) 12035 at 1115. (Rocker, NY) 13635 at 0315. (Christian, LA) 17730 at 0112 with IS. Via Brasilia. (Vaage, CA)

Swaziland: Trans World Radio, 9655 at 0358 with handbell IS, program in unidentified African language, EE bible lesson at 0430. (Lamb, NY)

Syria: Radio Damascus, 12085 at 2018. (Moser, PA) 2125 on 15095. (Martin, IA)

Tahiti: Radio Tahiti, 11825v at 0645 with non-stop Tahitian music, ID in Tahitian on the hour, news in FF. (Barry, CA)

Taiwan: Voice of Free China, 7130 in Korean at 1004. (Foss, AK)

Togo: RTV Togolaise on 5046 at 0723 with music, man in FF and possible vernacular. (Moser, PA)

Tunisia: RTT Tunisienne, 11550 in AA with Arabic music and news at 0538. (Lamb, NY)

Turkey: Voice of Turkey, 9445 at 0335. (Bumbeck, MT)

Ukraine: Radio Kiev, 11790 at 0015 with "Ukraine Today" and ID 0021. (Moser, PA) 15525 at 2359. (Tucker, GA)

United Arab Emirates: UAE Radio, Dubai, 13675 at 0315 with news, "Aspects of Arab Civilization." (Lamb, NY) 0340 with program on Islam. (Martin, IA) 15305 with ID 2337. (Vaage, CA) 21605 at 1345. (Christian, LA) Voice of the UAE, Abu Dhabi, 13605 at 2205. (Prudori, ON) 2302d with listener's letters, press review. (Carson, OK)

United States: Croatian Radio via WHRI, 7315 at 0033 in EE and Croatian. (Tucker, GA)
WWCR, 0115 on new 7435. (Carson, OK)
WINB, 15145 at 0050, sacred music, ID. (Carson, OK)

at 1530. (Seefeldt, WI)

AFRTS feeder, 7570 at 0446 with PSA's, "Weekend Headlines" show and AP news. (Lamb, NY)

USSR: Radio Russi, 9810 at 1127 with woman in RR. (Moser, PA)

Radio Moscow, 9600 at 1245 (Christian, LA) 9660 at 0100 with news. (Vaage, CA) 11710 at 2342, 11840 (via Cuba) at 1834, 11850 via Cuba at 0410, 11980 at 0334, 12010 at 0636, 15375 at 1400, 15480 at 1653 and 15560 at 1345. (Carson OK/NM) 11840//15500 at 1535. (Lamb, NY) 17670 at 1559. (Prudori, ON) 17695 at 2155. (Rocker, NY) 21810 at 1225. (Northrup, MO)

Vatican: Vatican Radio, 9635 at 0251 in FF. (Moser, PA) 11620 at 0245 in FF, news in EE at 0250. (Lamb, NY) 11625 at 0250, into SS at 0315. (Rathbun, TX)

Venezuela: Radio Tachira, 4830 at 0258 in SS. (Tucker, GA)

9540 Radio Nacional, 0045 with news in EE. (Carson, OK)
Ecos del Torbes, 4980 at 0031 in SS. ID 0034, theme from "Star Trek—The Next Generation." (Moser, PA) 0225 with tangos and classical music. (Sign off 0357. (Lamb, NY)

Vietnam: Voice of Vietnam, 15009 at 1230. (Tucker, GA) 15010 at 1237 music, woman announcer with talk. (Moser, PA) 1340 with commentary, Vietnamese music. (Carson, OK)

Yemen: Republic of Yemen Radio, San'a, 9780 in AA

at 1916 with mideast music. (Moser, PA)

Yugoslavia: Radio Yugoslavia, 9620 at 0002 with news and features. (Lamb, NY) 11735 at 0000 with sign on, news, comments on Yugoslavia's breakaway republics. (Carson, OK)

That's it! Some good reports from some first timers this month. Thanks to the following who checked in this time:

William Moser, New Cumberland, PA; Mike Martin, Monroe, IA; Marty Foss, Pitkas Point, AK; A.E. Bednarski, North Vancouver, BC; Gigi Lytle, Lubbock, TX; Tony Prudori, Thunder Bay, ON; Marie Lamb, Brewster, NY; John Spencer Carson, Norman, OK; Bob Chrisitan, Livingston, LA; Daryl Rocker, Frankfort, NY; David A. Gasque, Orangeburg, SC; Todd Borsch, Princeton, IL; Mark Northrup, Gladstone, MO; Robert E. Tucker, Jr., Savannah, GA; J.M. Bumbeck, Missouli, MT; Charles A. Rathbun, Jr., Arp, TX; Patrick J. Barry, Mission Viejo, CA; Bjorn F. Vaage, Granada Hills, CA, and Jeff Seefeldt, Wausau, WI.

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CIRCLE 70 ON READER SERVICE CARD

To Coax Or Not To Coax???

Coaxial cables cause me frustration. I've tried to explain it in my articles and books over the years and, judging by the questions I get from readers, I'm not doing a good job!

I don't think anything causes more confusion among SWL's than coax. Most communications receivers today have a coaxial input connector for antennas, and SWL's are bombarded with claims that using coax to connect your receiver to your antenna will reduce noise and bring it signals that are stronger and clearer than with ordinary lead-in.

But is this really so? Will changing over to coax from ordinary insulated lead-in wire really improve the performance of your antenna system? The answer is it depends. Some types of antennas need coax. Other don't. And if you don't connect and use coax properly, it doesn't do any good. In fact, improperly installed and used coax can degrade antenna performance!

What Is Coax?

Coaxial cable consists of four parts, as shown in Figure 1. The inner or center conductor is usually a solid copper wire. This is surrounded by an inner jacket or dielectric of foam, plastic, or some other insulating material. The inner jacket in turn is surrounded by a metallic braid or shield of copper, aluminum, or other electrically conducting metal. The shield is then surrounded by a waterproof outer jacket of rubber or other insulating material.

You're probably aware that the purpose of the shield is just what its name suggests—to keep the signal carried by the inner conductor from radiating away and also to prevent other signals from getting into the center conductor. But that shield won't keep the desired signal in and unwanted signals out unless you keep in mind one simple but important rule: the shield has to be connected properly at the antenna end of the coax and at the receiver end of the coax. If it's not, the shield won't

do its job; unwanted signals can get in and the desired signal can "leak" from the coax. It's that simple.

There's a lot of mathematical and theoretical gobbledygook involving voltage and currents in antennas why this is so, but the easiest way to understand it is to remember that the shield is a conductor just like the center conductor. (Coax is just a fancier version of the twinlead used with FM receivers and TV sets). Both conductors must be connected to an antenna consisting of two "halves." A dipole, for example, is a wire a half wavelength long at the operating frequency which is split into equal sections each a quarter wavelength long. The center conductor of coax is connected to one quarter wavelength section while the shield is connected to the other. In vertical antennas, the center conductor is connected to the vertical radiator while the shield is connected to an electrical counterpoise such as the ground itself, radials, or a metal car body. Regardless of how the center conductor and shield are connected, the fact remains they both have to be connected to something; you can't leave the shield "floating."

You might be ready to dispute me on this, because if you connect the center conductor of coax to a random wire antenna, as shown in Figure 2, but don't connect the shield to the antenna, you'll still hear plenty of signals. This is because the center conductor can still carry radio energy from the antenna to your receiver regardless of whether the shield is floating or not. However, if the shield is floating, it won't be doing its job. Signals from the antenna can "leak" out of the coax and unwanted signals can get in. There's no quick solution to this, because the antenna in Figure 2 doesn't have any place the shield can be connected to.

Suppose the coax used in Figure 2 is terminated in a PL-259 connector, which is then connected to the SO-239 coaxial input jacket on your receiver. What happens to the shield? In this case, the shield acts as another random

wire antenna. In fact, you could use the shield by itself as an antenna.

If you're convinced you need to use coax, you have to use an antenna that offers two "halves" for the center conductor and shield to connect to. Types that do are dipoles, verticals, commercially available multiband antennas such as slopers and windoms, and active antennas. In fact, use of coax is mandatory with such antennas; otherwise, they are detuned and their performance drops like a brick. If an antenna doesn't offer two halves—and that includes just about every type of random or longwire antenna you can think of—then coax won't do any good. That shield has to go somewhere at the antenna.

When Is Coax Useful?

When connected to antenna that works with a counterpoise, the shield on coax prevents any signal from entering through the feedline and keeps the signal from the antenna from leaking out. This can be a real benefit in a lot of situations.

For one thing, you can run coax near electrical noise sources (motors, light dimmers, and the rest of the noise generators that are so common these days) without having to worry about any of that noise getting into the signal from your antenna. If you're plagued by lots of electrical noise at your receiving site, try using an outdoor active antenna in several different locations on your property. When you find the quietest location, you can then connect it to your receiver using coax and no additional noise will get into the signal on the path from the antenna to you.

Another advantage is that coax is unaffected by surfaces it lays upon or is adjacent to. I recently had a conversation with a SWL who lives in an apartment, and he had a problem that at first stumped me. He had installed an outdoor antenna mounted on the roof of his apartment building, and complained that he had excellent reception above 5 MHz but could receive nothing at all below that frequency. I suggested that maybe he had a re-

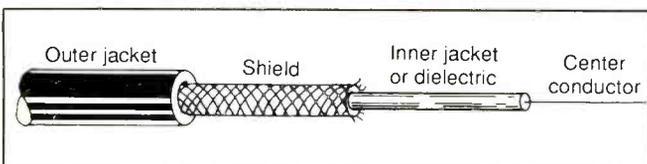


Figure 1

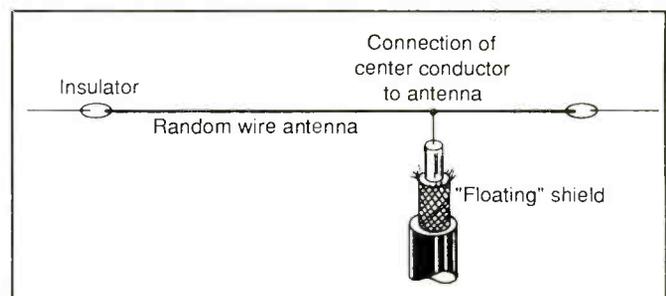


Figure 2

ceiver problem, but he told me that friends had brought over their receivers and had encountered the same problem. After talking it over a few minutes, I asked about the construction of his apartment building. It turned out that the building had a steel frame, and the insulated lead-in wire from his rooftop antenna ran down the side parallel to the internal steel frame. I had a hunch that on frequencies below 5 MHz the signals in the lead-in wire were being inductively coupled to the building's steel frame and sent to ground. He took my suggestion and installed an antenna that needed coax for its lead-in cable. He later reported that he could now receive signals below 5 MHz without any trouble!

If you're faced with similar noisy or irregular reception conditions and want to see if coax would be an improvement, remember that it's not as simple as just replacing the insulated lead-in wire with coax. The antenna design must have some sort of counterpoise that you can attach the coax shield to. Otherwise, the shield will float and you're just back where you started from.

How Big Should Coax Be?

Coax isn't all the same. There's the relatively small diameter RG-58 variety, and the large

diameter RG-8 coax. The larger diameter types such as RG-8 are often described as "low loss," meaning they "lose" less of the signal from the antenna due to leakage, etc. So you should always use RG-8 or some other low loss coax, right?

Nope! That "low loss" description is mainly of interest to ham radio operators and listeners at frequencies above 150 MHz. For hams, using a low loss cable can mean that as much as 5% to 10% more power from their transmitter and antenna. Scanner listeners know that low loss coax can make a big difference in trying to hear weak ones on the UHF bands, especially if some sort of antenna-mounted preamplifier is in use.

But unless you fit in those two categories, there's no need to use low loss coax, especially on frequencies below 30 MHz. The difference in signal loss for receiving purposes is so slight that you need laboratory instruments to measure it. Large diameter coax cables are more difficult to bend and route, making installation a pain, and they also cost considerably more. Odds are ordinary RG-58 coax will do just fine for you.

Hooking It Up And Wrapping It Up

It's a good idea to treat outdoor coax connectors with one of the available "coax seal-

ing" products or strong electrical tape. The point where a connector is attached to coax undergoes a lot of stress and strain, and this is especially so where the antenna is subject to vibration, movement, wind, freezing water, etc. With time, the insulation can crack open at that point, water can seep in, and suddenly you have an electrical Alice in Wonderland situation inside your coax.

What if your receiver doesn't have a SO-239 coaxial input jack and instead has the terminal strip or spring-loaded terminals? No problems; just attach the center conductor wire to the "antenna" or "A" terminal and the shield to the "ground" or "G" terminal.

Finally, a coax isn't forever. It does deteriorate with time, especially if it's in a wet climate subject to wide temperature variations. If you're currently using coax, and it's more than four years old, you ought to seriously consider replacing it.

So do I use coax? Yes, but only with my ham band vertical antenna and a remote active antenna that I mainly use for longwave reception. The design of those antennas make the use of coax mandatory. For my random wire antennas, I use ordinary insulated wire for a lead-in. The lead-in wires go to an antenna tuner, and the output of the tuner is connected by a short length of coax to my receiver. Use coax when it's really necessary, but only when it's really necessary! ■

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CIRCLE 66 ON READER SERVICE CARD

POP'COMM's World Band Tuning Tips

February, 1992

This PopComm feature is designed to help you hear more shortwave stations. Each month, this handy, pull-out guide shows you when and where to tune to hear a wide variety of local and international broadcasts on shortwave.

The list includes broadcasts in many languages besides English. Most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcast times and frequencies. Changes in propagation conditions may also make some stations difficult or impossible to receive. Your own equipment and receiving location will also have a bearing on what stations you are able to hear.

Note: EE, SS, FF, etc. are abbreviations for English, Spanish, French and so on. Some frequencies may vary slightly. All times are in UTC.

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2410	R. Enga, Papua New Guinea	1030		5035	R. Aparecida, Brazil	0030	PP
2485	VL8K, Katherine, Australia	1045		5040	LV del Upano, Ecuador	0100	SS
3205	R. Ribeirao, Preto, Brazil	0130	PP	5055	TIFC, Costa Rica	0430	EE religion
3210	R. Mozambique	0400	PP	5286	R. Moundou, Chad	0500	sign on, FF
3215	Radio Oranje, South Africa	0300	Afrikaans	5570	R. Nueva Vida, Cucuta, Colombia	1000	SS
3235	R. West New Britain, P. New Guinea	1130	Pidgin	5950	Guyana Bc, Corp	0703	
3235	R. Clube Marila, Brazil	0200	PP	5965	R. Havana Cuba	0400	
3250	R. Luz y Vida, Honduras	0230	SS	5975	BBC	0030	via Antigua
3260	R. Madang, Papua New Guinea	1030		6005	BBC	0530	via Ascension
3270	R. Namibia, Namibia	0430	EE	6005	CFCX, Canada	0700	
3280	La Voz del Napo, Ecuador	0300	SS	6010	R. Mil, Mexico	0300	SS
3300	R. Cultural, Guatemala	0330		6010	R. Bahrain, Bahrain	0330	AA
3320	R. Orion, South Africa	0245		6010	R. America, Peru	0145	SS
3339	R. Altura, Peru	0100	SS	6015	R. Austria Int'l	0530	via Canada
3355	R. Botswana	0400	SS	6030	R. Globo, Brazil	2330	PP
3365	R. Cult. Araraquara, Brazil	0100	PP	6040	Deutsche Welle, Germany	0100	via Antigua
3366	R. Rebelde, Cuba	0245	SS	6060	R. Nacional, Argentina	1000	SS
3905	R. New Ireland, P. New Guinea	1100	SS	6045	R. Integracion, Uruguay	0100	ex Libertad Sport
3945	R. Vanuatu, Vanuatu	0930		6050	R. Nigeria, Ibadan	2306	sign off
3980	V of Puijiang, China	1200	CC	6075	Caracol Bogota, Colombia	0600	SS
4040	Vladivostok Radio	1130	RR	6090	R. Bandeirantes, Brazil	0800	PP
4485	Bashkir R., Ufa, USSR	1100	RR	6115	R. Union, Peru	0945	QRM-Colombia
4607	RRI, Serui, Indonesia	1300	Indonesian	6115	V of the Strait, China	1000	CC
4753	RRI Ujung Pandang, Indonesia	1200	II	6120	R. Globo, Brazil	0900	PP
4765	RTVC, Congo	2200	FF	6130	R. Portugal	0700	sign off
4775	R. Tarma, Peru	0500	s/off, SS	6135	R. Aparecida, Brazil	0930	PP
4783	RTV Bamako, Mali	0550	FF	6155	R. Austria Int'l	0730	
4800	R. Popular, Ecuador	0200	SS	6165	Swiss R. Int'l	0630	
4809	Rdf. Libertad, Bolivia	1030	SS	6174	R. Tawantinsuyo, Peru	1000	SS
4810	R. San Martin, Peru	0930	SS	6180	R. Nac. Amazonia, Brazil	0900	PP
4815	RTV Burkina, Burkina Faso	0600	FF	6210	European Christian Radio	0600	
4815	Rdf. Londrina, Brazil	0130	PP	6305	La Voz del Cid (clandestine)	0600	SS
4830	R. Tezulutlan, Guatemala	0130	SS	6400	R. Venceremos (clandestine)	0215	SS
4835	R. Tezulutlan, Guatemala	0130	SS	6549	V of Lebanon	0530	AA
4845	R. Cabocla, Brazil	0100	PP	6907	Africa 2000, Eq. Guinea	2100	
4850	CRTV, Cameroon	0430	FF/EE	6724	R. Satellite, Peru	0130	SS
4865	La Voz del Cinaruco, Colombia	0300	SS	7100	A Voz do Galo Negro (clandestine)	0045	FP
4865	Gansu PBS, China	1130	CC	7113	Lao National Radio	1130	Lao
4870	ORTB, Benin	0457	sign on, FF	7140	R. Australia	1030	
4885	R. Clube do Para, Brazil	0300	PP	7145	R. Algiers, Algeria	2200	FF
4890	R. France Int'l	0430	via Gabon	7190	Rep of Yemen Radio, Aden	0030	sign on, AA
4890	ORTS, Senegal	2345	FF	7190	R. Africa, Eq. Guinea	2100	
4895	R. Brazil Central	0030	PP	7200	Somali Bc. Service, Somalia	0259	sign on
4900	La Voz de Saquisilí, Ecuador	0230	SS	7205	Voice of America	0200	via Greece
4904.5	R. National, Chad	0427	sign on, FF	7215	RTV Ivoirienne, Ivory Coast	2300	FF
4910	LV de Mosquitla, Honduras	0130	SS	7235	Deutsche Welle, Germany	0400	AA, via Malta
4925	Em. Meridiano 70, Colombia	0100	SS	7240	Croatian Radio, Croatia	0300	
4934	R. Tropical, Peru	1000	SS	7255	Voice of Nigeria	0457	sign on
4939	R. Continental, Venezuela	1000	SS	7270	R. Polonia, Poland	2330	
4955	R. Marajoara, Brazil	0300	s/off, PP	7275	ELBC, Liberia	0650	sign on
4991	R. Animas, Peru	0400	s/off, SS	7315	Croatian Radio	0000	via WHRI
5005	R. Libertad, Bolivia	1000	SS	7355	WRNO, Louisiana	0100	
5011	Escuelas Radiofonicas, Ecuador	0225	sign off, SS	7375	R. for Peace Int'l, Costa Rica	0600	
5015	R. Pioneira, Brazil	0230	PP	7395	WCSN, Christian Science Monitor	0100	
5020	ORTN, Niger	0500	FF	7475	RTV Tunisienne, Tunisia	0400	AA
5025	Bhutan Bc. Service	1230		7480	Swiss R. Int'l	1330	via China
5030	R. Catolica Nacional, Ecuador	0200	SS	8638	VNG, Australia	1000	time signals

Freq.	Station / Country	UTC	Notes	Freq.	Station / Country	UTC	Notes
9265	Icelandic Nil Bc Svc	0730	EE	11865	R. Denmark	0430	DD, via Norway
9400	R. Iran (clandestine)	1925	sign off, Farsi	11910	R. Budapest, Hungary	0030	
9410	BBC	1400		11920	R. RSA, South Africa	0445	
9435	Kol Israel	0000		11935	BSKSA, Saudi Arabia	0400	AA
9445	Voice of Turkey	2330	TT	11940	R. Romania Int'l	0200	
9455	WCSN, Maine	0200		11940	R. Singapore	1100	
9465	KFBS, Saipan	1530		11940	R. Jordan	0330	AA
9480	TWR, Monaco	0645		11950	R. Havana Cuba	0000	
9486	R. Tacna, Peru	0400	SS	11955	Voice of Turkey	0400	TT
9520	R. Veritas, Philippines	1200	II	11965	R. France Int'l	0100	SS
9525	R. Marti, via VOA	0030	SS	11975	R. Tashkent, Uzbekistan	0100	EE
9535	TWR, Bonaire	0345		12000	R. Jordan	0330	AA
9545	Solomon Is. Bc. Corp	0730		12005	RTT, Tunisia	0430	AA
9555	R. Portugal, Portugal	0200	PP	12070	Georgian R., Georgia SSR	1659	sign on
9560	V of Ethiopia	1300		12085	R. Damascus, Syria	2110	
9565	R. Universo, Brazil	0100	PP	12127	British Forces Bc. Svc	0130	via BBC Cyprus
9570	R. Romania Int'l	0300	SS	12160	WWCR, Tennessee	2330	
9575	RAI, Italy	0100		13605	Capital Radio, via Voice of UAE	2230	
9580	R. Australia	1200		13610	Deutsche Welle, Germany	0100	
9575	R. Mediterranean Int'l, Malta	0100	sign on, FF	13630	R. For Peace Int'l, Costa Rica	0200	
9580	R. Australia	1200		13635	Swiss Radio Int'l	2130	
9590	BBC	0030	via Canada	13655	BRT, Belgium	2330	
9600	V of UAE, Abu Dhabi	2200	EE	13670	UAE Radio, Dubai	2000	AA
9605	Adventist World Radio	0500	via Portugal	13700	R. Netherlands	2030	
9630	Spanish National Radio	0000		13710	BRT, Belgium	2330	
9635	R. Portugal	2200	PP	13750	Israeli Radio	0430	Heb., Home Svc
9640	R. Pyongyang, N. Korea	1500	EE	13770	WCSN, Christian Science Monitor	2000	
9660	R. Australia	1100		15030	R. For Peace Int'l, Costa Rica	1900	
9670	Adventist World R., Portugal	0815		15090	Vatican Radio	2100	
9690	R. Beijing, China	0330	via Spain	15095	R. Damascus, Syria	2110	
9695	R. Sweden	0330		15100	Kol Israel	2130	EE
9705	R. Portugal	0230	EE	15110	Spanish National Radio	2000	SS
9700	R. New Zealand	1100		15120	R. New Zealand Int'l	2206	
9720	Sri Lanka Bc. Corp.	1230		15140	R. Havana Cuba	0300	
9725	Adventist World R., Costa Rica	1250		15170	R. Liberty, Portugal (RFE/RL)	0430	Azeri
9735	R. Nacional, Paraguay	0000	SS	15180	R. Vilnius, Lithuania	2300	
9735	Cyprus Bc. Corp	2230	wknds, Greek	15185	WINB, Pennsylvania	2130	
9740	R. Beijing, China	2200		15200	R. France Int'l	0100	SS
9745	R. Bahrain	0500	AA, QRM-HCJB	15205	Voice of America	2300	
9750	R. Korea, S. Korea	1245	EE	15208	R. Bangladesh	1230	
9755	R. Monte Carlo Middle East	0400	via Canada	15210	Radio RSA, South Africa	1700	
9765	V of the Mediterranean, Malta	0600		15250	R. Romania Int'l	1500	
9780	Voice of the UAE	2200	sign on	15260	VOIRI, Iran	0330	sign on
9785	KVOH, California	0630		15305	V of the UAE, Abu Dhabi	2200	EE
9830	Croatian Radio	0600		15320	UAE Radio, Dubai	2300	
9860	R. Netherlands	2030		15325	R. Japan	1500	via Fr. Guiana
9870	R. Austria Int'l	2230	SS	15325	Spanish National Radio	2230	SS
9885	Swiss R. Int'l	1845		15335	FEBA, Seychelles	1359	sign off
9900	R. Cairo, Egypt	0300	AA	15345	Trans World Radio, Bonaire	1230	
9905	BRT, Belgium	2100		15345	RTM, Morocco	1400	Berber
9942	La Voz del CID (clandestine)	1330	SS	15350	R. Luxembourg	0100	
9965	R. Caiman (clandestine)	0200	SS	15365	R. Australia	1100	
9977	R. Pyongyang, N. Korea	1100		15415	R. Cairo, Egypt	2000	
11455	R. Kisangani, Zaire	0400	s/on, FF	15430	R. Austria Int'l	1330	
11500	R. Beijing, China	2130		15440	R. Finland Int'l	1459	s/on, Finnish
11580	V of Hope, Lebanon	0500	AA	15450	RT Tunisienne, Tunisia	2330	AA
11590	V of the Strait, China	1100	CC	15480	FEBC, Philippines	0200	
11595	RS Macedonia, Greece	0500	Greek	15485	R. Vilnius, Lithuania	2300	
11660	R. Sofia, Bulgaria	2130	PP	15510	R. Afghanistan	1900	FF, via USSR
11685	REBC, Philippines	1030	EE	15570	R. Netherlands	1700	via Madagascar
11695	BRT, Belgium	0600	Dutch	15585	R. Moscow	2300	
11705	R. Sweden	0215	EE	15600	V of Free Iraq (clandestine)	1700	AA
11715	R. Beijing, China	0330	via Mali	15610	Adventist World R./KSDA, Guam	2300	
11715	KNLS, Alaska	0800	sign on	15650	V of Greece	1235	EE
11715	R. Korea, S. Korea	1030	via Canada	15670	British Forces Bc. Service, England	0030	(feeder)
11730	R. Sofia, Bulgaria	0300		17555	R. Beijing, China	0100	sign on
11730	BBC	0300	via Seychelles	17590	R. Moscow	1900	FF
11730	Spanish National Radio	0500	SS	17680	RTBF, Belgium	0500	FF
11735	R. Oriental, Uruguay	0100	SS	17710	R. Norway Int'l	1200	NN/EE
11740	TWR, Swaziland	0527	sign on	17725	Libyan Jamahiriya Bcsting	1900	AA
11740	R. Portugal	1900	EE	17730	R. Alma Ata, Kazakhstan	2130	
11750	BBC	0230	via Ascension	17740	R. Yugoslavia	1200	
11760	R. Tbilisi, Georgian SSR	2000		11740	R. Sweden	1300	EE
11780	Voces en Libertad, Argentina	1400	SS, ex-Belgrano	17745	RTV Algerienne, Algeria	2000	AA
11780	R. Nacional Amazonia, Brazil	2200	PP	17810	FEBA, Seychelles	0400	
11790	R. Kiev, Ukraine	0000		17810	R. Japan	2330	
11790	R. Veritas Asia, Philippines	1100	VV	17830	BBC via Hong Kong	0044	sign off
11795	UAE Radio, Dubai	1600		17860	Qatar Bc Service	1300	AA
11795	Cyprus Bc. Corp.	2213	s/on, weekends	17865v	R. Nac. Colombia	2100	SS (varies widely)
11805	R. Globo, Brazil	2300	PP	17880	V of Turkey	2230	
11805	KTWR, Guam	0950	EE	17902	R. Nacional, Colombia	2300	
11815	Trans World R., Bonaire	1230		17950	V of Free Iraq (clandestine)	2245	AA
11815	R. Polonia, Poland	1430		21480	HCJB, Ecuador	1630	
11830	R. Araguaia, Brazil	0100	PP	21555	Spanish National Radio	1400	SS
11840	R. Moscow	1430	via Cuba	21690	R. Moscow	0800	RR
11840	R. Japan	1500		21705	R. Norway Int'l	2200	NN
11865	R. Norway Int'l	0400	EE/NN	21740	R. Australia	0200	

Up Your SSB Power Output

Most single sideband transceivers won't talk to their peak radiated power output. If you are an amateur radio operator, you have probably noticed that your 200-watt input, 100-watt output, ham, high-frequency SSB set doesn't go much beyond 20 to 30 watts when you are speaking into the microphone. Yet, when you whistle into the microphone, that pure note pops the watt meter up to its rated 100 watts output.

On a CB set, the sideband power is nowhere near the whistle power output when you view it on a watt meter or forward power indicating SWR bridge. This is also true for marine SSB transceivers and equipment used on MARS and U.S. Coast Guard frequencies—on single sideband, talk power is dramatically less than whistle power.

Most sideband transceivers are advertised in input power watts. If it's rated at 200 watts input, expect to get about 50 percent efficiency out of a transistorized output stage. Most ham sets are 200 watts input for 100 watts output. Some marine SSB transceivers are 250 watts input, or about 125 watts output. A little QRP CB-type, 10-meter type might be rated at 25 watts input, and this will lead to about 12½ watts output. If it's rated at 25 watts output, then you can expect that its input power was approximately 50 watts. Anyway around it, you get about half of the power output as the rated input power.

Step one in assuring good power output is to run oversized 12-volt DC cables. Run them directly to the battery or voltage distribution center for maximum voltage, minimum voltage drop. A simple way to test for minimum voltage drop is to whistle into the micro-

phone, and see whether or not the illuminated channel readout dramatically dims. If you can see your whistle dimming the panel lights, you probably need bigger battery cables. If it dims just a little bit, you are just fine.

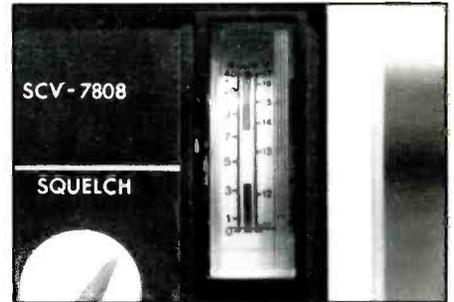
If the display should blink when you transmit, this indicates gross under-voltage feeding the unit, and you want to go to a better battery supply voltage immediately. Disappearing digits on transmit can usually be traced to very low battery voltage, or stray RF floating around the circuits due to poor grounding.

Your next step to determining proper power output is to use a peak reading watt meter. Instead of the watt meter or forward power VSWR needle jumping around during modulation, the needle appears to float and hover, deflecting to the point of peaks in your voice.

If you don't own a peak reading watt meter, multiply your average power output by 1.414. This will give you a more accurate figure on what your peak output power is.

Most SSB equipment will easily whistle up to its rated maximum power output. This is because your transceiver loves a nice pure tone for max forward power. But, your voice is made up of multiple tonal frequencies, plus variations in intensity, and no set in the world is going to put as much voice power output as whistle or constant-FM power output.

Take a look, on transmit, to the ALC meter on your transceiver. More than likely, it's going well beyond the ALC range, indicating the set is "pulling back" on power output. In fact, most factory new sets have such an aggressive ALC network in their transceiver, it goes overboard to make sure that your voice power doesn't get much more than about 20 to

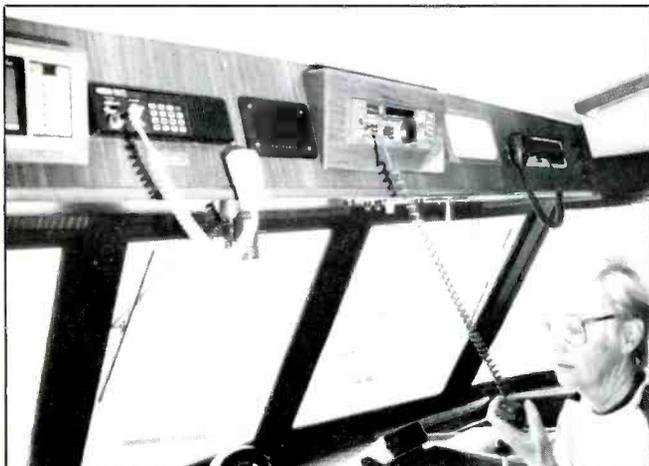


If your SSB/CB ALC reading is not moving the meter in the ALC mode, you have over-adjusted the ALC circuitry. Watch out for overmodulation.

30 watts out on an external watt meter. Sound familiar?

Your next step is to obtain a service manual for your particular piece of equipment. This is always an extra cost item, but rarely will cost more than \$10 or \$20. It's a good investment to get that manual, so order it.

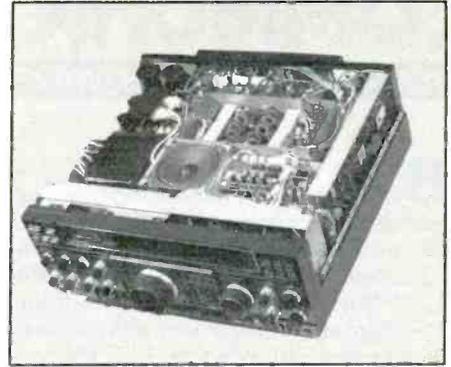
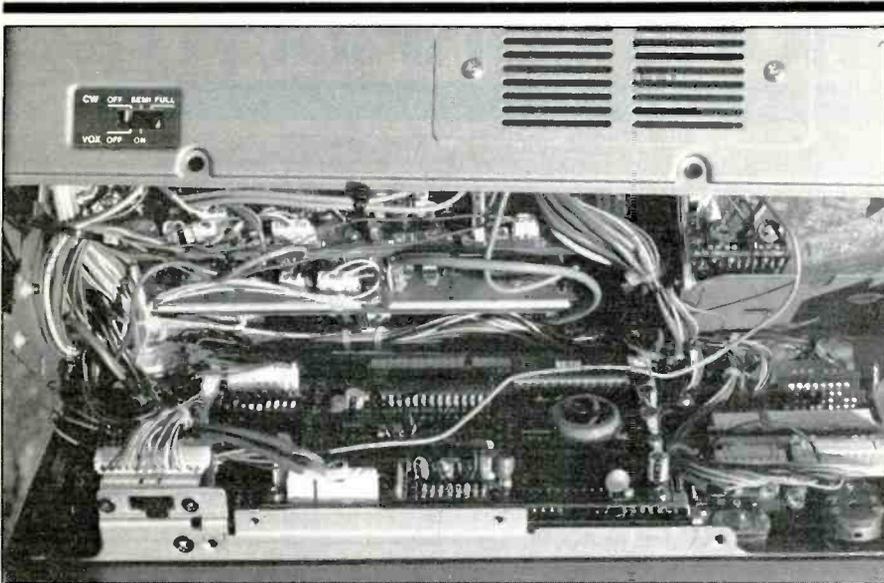
Now check out the manual when it deals with setting the ALC levels within your transceiver. You are going to be working with a single ALC plastic pot, and you're going to be changing the setting of that pot ever so slightly. In fact, on most SSB equipment, just the slightest amount of change will pop your average power output from 20 watts to 50 watts, and bring the ALC meter into the proper ALC metered zone on the front of your SSB radio. Verify that you have set the ALC to factory limits by making voltage checks as indicated in the service manual. While you can simply rotate the pot for a little bit more



Talking too far away from the SSB mike could cut power output in half!



Most SSB and commercial marine mikes use a noise cancelling element, and must be held close to your mouth for full power output.



Most SSB sets must be opened up to access the ALC adjustment control. Make sure you consult a service manual before you begin.

power output, it's risky not to check what's happening deep down inside the transmitter. Always stay within the factory specs, but push those specs to the very limit to sometimes double and even triple your modulation power output.

REPEAT: CAUTION - Don't reduce the ALC protection circuitry levels beyond factory recommended specs.

Now take a look at your average power output. As you talk, the watt meter will now

hover around 50 to 60 watts. With a peak reading watt meter, you'll probably see a little over 100 watts PRP output. You will also notice your current consumption going up, and for a 100-watt output set, expect it to draw around 18 amps on modulation peaks. You can also expect your set to run noticeably warmer on long periods of transmit. Just keep an eye on that ALC meter, and make sure that you don't overmodulate which could lead to distortion.

After modifying the ALC circuit to the edge of factory specs, don't whistle into the mike, and don't run FM or AM or CW at maximum power output. Since you've raised the level of power output, you should reduce AM, FM, or CW to no more than 100 watts out.

With these modifications, not exceeding factory service manual specifications, you can dramatically increase talk power, and have a much better sounding SSB emergency communications system. ■

WEFAX To The Max



PC GOES/WEFAX 3.0 \$250

PC GOES/WEFAX 3.0 is a professional wefax image reception and analysis system for the IBM PC and compatibles. The product includes a demodulator that handles both AM and FM fax signals, advanced signal processing software, tutorial cassette, and complete 325 page reference manual. The software includes the following advance features:

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- CGA,HGA,EGA,VGA & Super VGA
- Orbital Prediction and Display
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PC HF Facsimile 5.0 is a complete reception system for shortwave FSK facsimile on the IBM PC and compatibles. The product includes an FSK demodulator, tutorial audio cassette, 250 page manual and signal processing software. The product includes many of the advanced features of PC GOES/WEFAX 3.0 but at a fraction of the price. Call or write for a complete catalog of products.

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615 S. El Camino Real, San Clemente, CA 92672
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CIRCLE 58 ON READER SERVICE CARD

Computer Aided Scanning

a new dimension in communications from Datametrics



New Radio Shack PRO 2006 owners for the first time have access to the exciting world of Computer Aided Scanning with the highly acclaimed Datametrics Communications Manager system. Computer Aided Scanning is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

The Datametrics Communications Manager provides computer control over the Radio Shack PRO2006 receiver.

Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.

Uses innovative Machine State Virtualizer technology (patent pending) hardware interface by Datametrics.

Comprehensive manual includes step by step instructions, screen displays, and reference information.

Extends receiver capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.

Simple 4 step installation - no soldering or modification to normal receiver operations.

Datametrics, Inc

Computer Aided Scanning system \$ 349

PRO2006 receiver w/interface installed and CAS system \$ 749

Manual and demo disk \$ 15

Requires Radio Shack PRO 2006 receiver and IBM PC with 360K memory (640K for full channel capacity) and parallel (printer) port.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr, Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

CIRCLE 63 ON READER SERVICE CARD

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/led/location
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
ttc	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)

Bunkers, CW at 1954; UKFG, u/i Soviet vessel clg DAN in CW at 1853. (Boender, Netherlands)

444: ATGP, MV Vishva Ambar clg DAN in CW at 2050; 3EGG3, MV Esmerlada 1 w/Norddeich Radio in CW at 2108; UJBT, MV Neva in CW at 1943 w/msg to Morflot Copenhagen. (Boender, Netherlands)

454: LLSW3, MV Berge Duke in CW at 1800; UACU, MV Varne Miounde, in CW at 0742 requesting pilot for Flushing; PFCA, MV Japan Sea sailing from Hamburg to Felixstowe w/ETA Felixstowe. CW at 0945; SYBD, MV Cherry Flower w/msg to Belovship Antwerp, CW at 0738. (Boender, Netherlands)

500: VAI, Vancouver, BC, Canada (Canadian CG) in CW at 0630 w/id V-marker. (Lyttle, BC, Canada)

512: JHRE, MV Fuyoh Maru, in CW at 1922 w/msg to Contiway Hamburg, ETA Elbe; UFEE, MV Vassia Stabrovskii in CW at 2105. (Boender, Netherlands)

521: Beacon INE, Missoula, MT at 0755. (Vaage, CA)

2670: NMW, Astoria, OR (USCG) in USB at 0530 w/Pacific High Seas wx; NOW, Port Angeles, WA, (USCG) in USB at 0620 w/marine wx for Juan de Fuca Strait. (Lyttle, BC, Canada)

2716: NAAS, USS Knox FF1052 clg Long Beach Control at 1135; NREH, USS Hawes FFG53 clg NavSta New York at 1045; GNID, HMS Amazon F169 clg Navy New Orleans Control at 1025; NNAC, USS Ortolon ASR22 using callsign Navy Unit 22 clg Charleston Navy Tug Control at 1045; NDKH, USS Merrimac A0179 wkg Norfolk SESEF at 1630.

3130: Foxtrot 5 Alpha to Lima 3 Romeo on USN Sealord channel w/lots of chit-chat. Trying to get in the playground. Then went to Back Top 1 - Have a good yankee on this freq. Hrd at 2100. (Novocaine, MD)

4028: YL/SS on LSB at 0705 w/5F grps. Off at 0721 w/carrier continuing briefly afterwards. On another night heard a similar bcst one hour earlier. (Gueguen, SK, Canada)

4125: VAE, Tofino, BC, Canada. (Canadian CG) w/wx. USB. (Lyttle, BC, Canada)

5177: At 2100 NNN in CW repeating. At 2105 YL/GG with Gruppe 15 x2 and into 5F grps. (Mason, England)

5332: FF(NCS) in contact with H, K, L, and O trying to establish an Alligator Playground (a data link) at 0212 in USB. (Willmer, MI)

5499: Brazzaville, Congo aviation wx in French. USB voice at 0630. Fair reception. (Lyttle, BC, Canada)

5870: NMF, Boston, MA in CW at 1040 sending North Atlantic wx. Off at 1103. (Kinsland, GA)

6372.5: SAG3, Gothenbur, Sweden. OM in Swedish w/ttc on USB. (Lyttle, BC, Canada)

6501: NMO, Honolulu, Hawaii, USCG w/marine wx & warnings at 0555. (Lyttle, BC, Canada)

6509: KAW52, Honolulu, Hawaii, NOAA stn w/voice announcement "This is Honolulu Weather Station Out. Hrd at 0604. (Lyttle, BC, Canada)

6676: San Francisco aeradio wkg Flight 370 in USB at 0625. (Lyttle, BC, Canada)

6708: YL/EE repeating 154 x3, 14841 051 from 2000-2007, then 5 tones and into 5F grps. Also on 7375 kHz. (Mason, England)

6753: VXA, Edmonton at 0224 on LSB w/wx for various civilian airports and Canadian Forces Bases. (Gueguen, SK, Canada); CJX, St. Johns, NF Canadian Military radio w/aviation wx in USB at 0447. (Lyttle, BC, Canada)

6784: YL/SS w/5F grps at 0302 on LSB. Seemingly

being jammed, sound like African talking drums, jamming very strong. Both off at 0315, w/CW transmission appearing immediately. CW off at 0320. (Gueguen, SK, Canada)

6840: At 2100 Rumanian "Skylark" tune here w/BBC World Service feeder sending nx in EE in background. Have written to BBC to learn if QRM from number stations is a problem. (Mason, England)

6873: VOA Feeder, Greenville, NC in USB w/EE programming. Hrd at 0658 w/id at 0700. (Lyttle, BC, Canada)

6979: OM/EE in USB at 0412 with 3/2F grps. (Willmer, MI)

7335: CHU, Ottawa, ON, Canada w/time signal. Announcements in EE & FF. Hrd at 0335. (Lyttle, BC, Canada)

7375: Every Sunday YL/GG w/3F x3, 5F, 3F at 1700. On this occasion repeating 599 x3, 27574, 053. At 1705 five dashes into 5F grps. YL says 9 as "Noyner." (Mason, England)

7387: Rumanian "Skylark" tune at 2000 in parallel w/6824 kHz. Next day 6824 was sending same signal but was paired w/5835 kHz. Ends with OM/Rumanian "Terminat" x3. At 2057 "Skylark" tune playing then off. At 2100 started up again foll by OM w/Terminat x3. Also on 6824 kHz. (Mason, England)

7415: Steel Drum type sound at 0200 on LSB, interspersed w/frequent buzzing sounds, still going at 0242. Hrd it again foll day. (Gueguen, SK, Canada)

7650: At 2110 very slow (4 wpm) CW w/5F grps us-

HOW I GOT STARTED

POPCOMM invites readers to submit the stories of how they got started in the communications hobby. Try to limit your story to about 150 words (more or less). If you can prepare it on a typewriter, all the better; otherwise please make it easily legible. If you have a photo of yourself taken recently (or when you began in radio), please send it along. We can't acknowledge or return material, whether or not it is used. Your story need be submitted only once. We'll keep it on file and consider it for future issues. All submissions become the property of *Popular Communications*.

Entries will be evaluated taking into consideration if the story they tell is interesting, amusing, or unusual. We reserve the right to make any necessary editorial changes to improve style or correct grammar.

Each month we will select one story and run it here. The person whose story is selected will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

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

Our Winner For February

This month we selected reader Ralph L. Cooper, ZL2AAV, of Marton, New Zealand. Ralph told us:

"I had just enlisted in the army and was in boot camp learning the art of soldering. Having completed the course, I had to be interviewed so it might be determined how I would



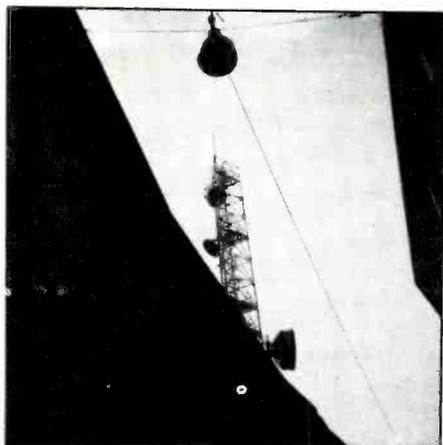
Ralph L. Cooper, ZL2AAV, is a ham and active shortwave monitor.

be spending the next six years of my enlistment.

"My interests leaned towards heavy transport and I requested that I be sent to school to learn more about this, and then serve in one of these units. My request was granted, and the next day I was on my way to the Army Service Corps school where I could enjoy myself learning about big trucks.

"When I arrived at the school, the Adjutant welcomed me and asked what course I was attending. I told him I was there to learn about trucks. He looked at me oddly, informing me that there wasn't any course of instruction relating to trucks at the Army School of Radio. The next day I commenced an eight month course in morse code, typing, and the operation of radio equipment.

"Radio has been my life since then. Look for me on the ham bands as ZL2AAV." ■



Microwave tower in Ravenna, Italy. Possible HF vertical antenna on top of tower.

ing cut nbrs AUV4E6DBNT. At 2115 15 dashes, 48, 48 then rptd text. Rpts were at 8 wpm speed. (Mason, England)

7888: YL/SS at 1040 sending 5F grps. Down at 1045, carrier on until 1049. Line bearing from Maine was 225 degrees. (White, ME)

8291.1: Alaskan Victory (WAH7646) wkg Hawaiian Victory (WTC4162) at 0417; Alaskan Victory was enroute to Honolulu. At 0643, tug Pioneer (WYP6150) checking in w/WGW (Tug Communications, San Juan, PR). All comms in USB mode. (Sabo, CA)

8453: VAI, Vancouver, BC, Canada (Canadian CG) in CW at 1513 w/V mkr. (Lyttle, BC, Canada)

8465: YL repeating SYNZ from 1820-1825. Adjacent on 8464 kHz YL/EE w/Lincoln Poacher callsign was sending 5F grps. (Mason, England)

8638: VNG, Australia time signal stn w/heavy RTTY QRM on top of signal. Hrd at 1240. (Lyttle, BC, Canada)

8640: Time pips at 1217 in AM. No voice announcement. (Margolis, IL) Poss DAM on 8638.5 kHz. (Ed.)

8701: HKB, Baranquilla, Colombia in CW at 1045 w/mkr. (Kinsland, GA)

8728: KMI, San Francisco, CA in cw at 1055 w/mkr. (Kinsland, GA)

8743: At 1058 "DTDU THIS IS KAM MAI. WHAT IS YOUR SHIPS NAME AND POSITION." Then indicated would connect vessel to operator and id'd ship as Don Juan. (Kinsland, GA)

8764: NMN, USCG, Portsmouth, VA in USB at 2250 w/wx data for Caribbean & Gulf of Mexico, and for a 2330 wx forecast. (Margolis, IL)

8765.4: NMC, USCG, Point Reyes, CA in USB at 0431 w/marine wx. (Lyttle, BC, Canada)

8775: U/i stn clg Z9K at 0242 on AM. Also called B8E. E2I hrd at 0328. Seemed to be a carrier on the whole time. (Gueguen, SK, Canada)

8778: Q6F and B2S hrd on LSB at 0539, various other stns also mentioned. Similar tfc can be hrd each night after 0500, w/new callsigns each time, sometimes continuing past 0600. Mainly OM oprs but some YLs. (Gueguen, SK, Canada)

8828: Honolulu VOLMET at 1100 delivers SIGMET N-6 re Tropical Storm Luke. (Kinsland, GA)

9023: Gangster in net w/Dragnet Whiskey and Bandsaw Juliet in USB at 1435 coordinating a data link. Devil Ops also up on this freq clg any station but recd no reply. (Willmer, MI)

9040: YL/GG rptng November Zulu w/tones at 2200. At 2205 202 26 Gruppen 649 67 Gruppen and into 5F grps. (Mason, England)

K3N w/5L grps in CW at 0100. (Margolis, IL)

9350: VOA feeder at Delano, CA in DSB. (Lyttle, BC, Canada)

9450: YL/GG repeating Foxtrot Bravo w/electronic tones 1700-1705. Then 5F traffic for 382 and 653. (Mason, England)

9465: YL/GG w/1-0 count here every Saturday at 2000. This time w/callup 399. After ten tones Gruppe 184 and into 3/2F grps. Also on 7375 kHz and rptd at same time on Monday. (Mason, England)

10122: U/i stn in CW at 0130 sends 518 518 00000. Goes down at 0135. Hrd on Wednesdays. Rough line bearing from Maine of 195 degrees. (White, ME)

10155: Cut nbr tfc at 2225 in CW. Good opr using a sideswiper key. 1-0 = AU34567DNT. Uses W in place of GR as shown in foll example of heading. #475 W35 BT. Noted opr also used accented E (dit dit dah dit dit) character. (White, ME) Possibly two oprs at this stn. Sked I copied the opr sent ltr K in place of D in cut nbr system. (Ed.)

10280: YL/EE in AM rptng 627 from 0230 until 0234. Then 534 x2 62 x2 and into 5F grps each x2. (Willmer, MI)

10440: YL/SS on AM rptng 163 from 0430 until 0434. Then 404 x2 58 x2 and into 5F grps each x2. (Willmer, MI)

10525: Numbers station YL/EE hrd at 1348. (Lyttle, BC, Canada)

10665: Missionary in duplex net on LSB w/Global about receiving a ring down tone and to call the switch opr. Hrd at 0324. (Willmer, MI)

11090: YL/EE in AM rptng 748 x3 00000 from 0130 until 0134. (Willmer, MI)

11190: YL/EE rptng 990 x3, 36318, 093 at 2100 every Mon. At 2105 five tones and into 5F grps. Rptd one and two weeks later at same time. Also on 14930 kHz. (Mason, England)

11244: Snowflake wkg Freight car for rdo check at 1234. (Kinsland, GA)

11491: At 1830 ten dashes then 3383 6050 and rptd until 1840. (White, ME)

12714: UUUU, MV Styr in CW at 1948 w/msg w/cyrillic characters. (Boender, Netherlands)

12984: VNG, Australia time signal at 1235. (Lyttle, BC, Canada)

13201: MAC027 wkg Thule at 1030. Reports 10 passengers and 10 pieces of registered mail. Requests p/p for wx at Aycock. (Kinsland, GA)

13207: Bandsaw Kilo in USB in contact w/Blue 01 during a Strategic Air Defense exercise. BK reporting a mass raid w/7 tracks moving North. Fighters have id'd 3 Bears and were getting jammed. Fighters eventually kill 5 targets. In second wave 60 out of 6 targets in both the North and South zones are destroyed. Spear, Bug, and Hound fighter flights were involved. Hrd. at 2218. (Willmer, MI)

13242: Moderator announces they "Standing by for traffic." Hrd at 1300 w/Moderator OUT at 1301. (Kinsland, GA)

13264: Shannon VOLMET at 1045 sending wx. (Kinsland, GA)

13289: Honolulu ATC receives position report from "670" re wx at 0220. (Kinsland, GA)

13385: 5L grps (cut nbrs) machine sent, very loud. Hrd at 1040. (White, ME)

13445.5: Guard Dog ins USB in contact w/Spirit, Dignity, and Clancy w/signal checks at 1707. (Willmer, MI)

13487: YL/EE w/1-0 count and 506. At 2110 ten tones Count 183 and into 3/2F grps. No warble jamming noted. (Mason, England)

13519: OM/RR at 2000 rptng 527 x3, 000 in AM mode. Off at 2005. (Mason, England)

14455: ROO non-EE w/occasional excerpts in EE gives position in South Pacific. Hrd 0208-0305. (Lyttle, BC, Canada)

14670: CHU, Ottawa, On., Canada time station FF/EE. Hrd at 2309. (Lyttle, BC, Canada)

14703: YL/EE w/3 + 2F grps on AM at 1528. (Margolis, IL)

14811: YL/EE w/3 + 2F grps on AM at 1550. (Margolis, IL)

14928: 8BY, prob Indonesian stn in CW at 0559 w/V Mkr. (Margolis, IL)

15000: WWV, US time signal stn at 0012. (Boender, Netherlands)

15450: YL/EE nbrs stn at 1334. (Lyttle, BC, Canada)

16000: VNG, Lyndhurst, Australia w/time sigs on AM, 0130 to page 0615 w/OM announcing stn ID & best freqs every 15 mins. (Margolis, IL)

16198: YL/EE with 1-0 count and "782" between 1300-1310. Then ten tones, Count 210 and into 3/2F grps. (Mason, England)

16310: YL/SS w/4F grps on AM at 1830. (Margolis, IL)



Another tower in Ravenna. Both towers were within a few blocks of the Poste E Telecomunicazzion building at Piazza Garibaldi. Photo courtesy of R.C. Watts, KY.

16414: YL/GG repeating Golf Charlie w/tones between 1000-1005, then 5F grps for 082 and 808. (Mason, England)

16928.4: LFX, Rogaland, Norway in CW at 1930 w/CQ DE LFX. (Boender, Netherlands)

17175: VAI, Canadian CG, Vancouver, BC, Canada in CW at 1515 w/V mkr. (Lyttle, BC, Canada)

17249: Halifax w/wx at 2209 for Canadian Maritimes on USB, incl warnings on hurricane. Off at 2217. (Gueguen, SK, Canada)

18645: YL/EE in AM at 1745 w/5F grps. (Margolis, IL)

19274: U/i w/5F msg, T=0. CW at 1153. (Margolis, IL)

19739: UDH, Riga, Latvia in CW at 1550 w/"UDH scan auto". (Margolis, IL)

19755: In here at 1313 when YL/GG said 073 073 58 Gruppen. Then into 5F grps. According to my log, addressee 073 is used by GG 2-ltr station Bravo Uniform (Mason, England)

20192: Shuttle Launch Control, Cape Canaveral, FL in LSB at 1632 gives 24-hour scrub of Shuttle Atlantis launch, due to bad wx. Freq id'd as F2 and 212. Next day Launch Control, "Mission Control", Houston, TX, hrd for sev. hrs. before/after launch of Atlantis. Atlantis hrd in comms w/Houston (via satellite relay) after morning launch. (Margolis, IL)

20524: YL/EE w/4F grps on AM at 1420. (Margolis, IL)

NNGP

UNITED STATES COAST GUARD CUTTER CHEROKEE (WMEC165)

THIS WILL CONFIRM YOUR RECEPTION
OF STATION NNGP, USCGC CHEROKEE,
ON 8241.5 KHZ USB AT 0553 UTC ON
NOVEMBER 15, 1989.

TRANSMITTER/POWER: URC-168, 230 WATT RECEIVER

ANTENNA: HF W/ IP

LOCATION: NORTH ATLANTIC OCEAN

SIGNATURE AND OFFICIAL STAMP:

Steph W. Jermal
PM3



This PFC was returned to Dave Sabo, CA

THE HAM COLUMN

KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Look, Ma, I'm On TV!

Amateur Radio enthusiasts have made great use of voice, radioteletype, computerized packet networks and many other modes of communication. The logical next step was video, and over the years, hams developed several means of sending images over the airwaves. Amateur television (ATV, and its cousin slow-scan TV, SSTV) may not offer network-quality programming, but they're an exciting way to exchange visual messages with other hams—and getting involved is easier than ever before.

Technical Considerations

Amateur began experimenting with slow-scan television (SSTV) in the early 1960s. SSTV sends still-frame pictures at the rate of about eight seconds per screen, or 6-7 still pictures per minute. An SSTV converter takes video from a source such as a home VCR or camcorder and translates a captured image into sound (a warbly conglomeration of tones—once you've tuned across an SSTV signal, you'll know what I mean!) The sound can be transmitted by radio to other stations equipped with similar converters that demodulate the audio to reproduce the image. Alternately, video converted to audio can be stored on everyday cassette tapes and saved for future transmission (an easy way to amass your own SSTV image library).

The audio bandwidth of an SSTV signal is comparable to that of single-sideband (SSB) voice, so the FCC permits SSTV on the HF bands (below 30 MHz). A General class Amateur Radio license (or higher) is required to transmit SSTV, however. Popular SSTV frequencies are 3.845, 7.171, 14.230 and 28.680 MHz.

Fast-scan television (FSTV, nowadays commonly called ATV) allows amateurs to send full-color, live-action video with an FSTV converter/transmitter that works much like the equipment in a regular broadcast station.

Sound can be transmitted on an FM sub-carrier channel, as on-carrier audio or even on another band. Live video requires greater bandwidth, so the FCC doesn't permit FSTV on bands below 420 MHz. You can operate ATV with a codeless Technician license.

Because of the line-of-sight nature of UHF propagation, ATV signals generally don't travel all that far. If you transmit from a high place under good conditions, however, you can achieve impressive results.

Mike Staines, WA1PTC, of Rochester, New Hampshire, beamed FSTV from Mt.

Washington (6000 feet elevation) that was clearly received by Bill Brown, WB8ELK, on Monhegan Island, off the coast of Maine. Brown witnessed shots of the Mt. Washington Cog Railway and even heard the blast of its whistle on a handheld portable Radio Shack TV set with a whip antenna. The distance covered by this simplex transmission was 120 miles, using less than two watts of transmitter power!

ATV Goes Far Out

ATV isn't limited to conventional uses. Hams launch helium-filled balloons equipped with tiny cameras and ATV transmitters. Bill Brown has made extraordinary videotape recordings of his own ATV balloon experiments. On one such project, an automatic solenoid-activated mirror was placed in front of the sideways-pointing camera. Every few minutes, the picture cycled between a shot of the horizon and a view looking straight down. This particular flight exceeded 120,000 feet in altitude. There was exhilarating footage clearly showing the curvature of the earth and the inky blackness of space.

Another intriguing application is to mount miniature cameras in the cockpits of radio-controlled model aircraft for spectacular "view-from-the-cockpit" transmissions. A few clever operators even fly their model planes strictly by their ATV camera's "pilot's eye view."

In 1983, earthbound Amateur Radio operators sent SSTV shots to ham/astronauts Dr. Owen Garriott, W5LFL, aboard space shuttle *Colombia*. ATV'ers made history in April 1991, as they made the first transmissions of live, color, moving video images from earth to a manned spacecraft; several ham stations sent good-quality pictures to the all-ham crew aboard space shuttle *Atlantis* during mission STS-37.

ATV Information

Newcomers to ATV have a variety of information sources available. The ATV ham radio net meets on 3.871 MHz every Tuesday evening at 9 PM Eastern Time. You can also get information via packet radio from Rich Critz, Jr., KB4N, of Nashua, New Hampshire, by sending a packet message to ATV at KB4N.NH.USA.NA.

Spec-Com is the official journal of the US ATV Society, which also publishes the *Amateur Television Handbook* (Spec-Com, PO

Box 1002, Dubuque, IA 52004-1002; tel 1-800-468-3545).

QST, the membership journal of the American Radio Relay League; *CQ* and *73* frequently feature articles on ATV.

A magazine dedicated to amateur television, *ATV Quarterly*, covers the latest doings in the world of ham video (1545 Lee St, Suite 73, Des Plaines, IL 60018; tel 708-298-2269).

The *ARRL Operating Manual* and *The ARRL Handbook* also have chapters discussing ATV operation and equipment.

Getting The Gear

Amateur television gear is not expensive. To try out ATV, you need a camera, an ATV transmitter, an antenna and a receiver. Because FSTV signals are in the 420-440 MHz range, most ordinary cable-ready home television sets work well as receivers (tune to channels 50-60). UHF transmissions are highly directional, so a beam antenna is often needed.

For about \$300 you can buy a 430-MHz low-power FSTV transceiver. Cameras range in cost from used black-and-white security cameras for less than \$50, to miniature CCD units for \$200 and up, to full-color home and commercial cameras or camcorders for \$500-\$3000 or more. High-gain directional antennas are easy to find or build at a modest cost. RF power amplifiers start at about \$100. There are telephone bulletin board systems (BBSs) that offer ATV conference and software.

Popular ATV frequencies include 439.25, 426.25 and 1289 MHz for direct (simplex) transmission. ATV repeaters are found at 439.25 (input)/426.25 or 421.25 (output) and 434 (input)/1253 (output). Repeater stations make it possible to greatly stretch the range of line-of-sight UHF signals on the 70-cm band and above. The *ARRL Repeater Directory* lists seven pages of ATV repeaters across the US.

You can get in on the action of amateur television. Please contact ARRL HQ at 203-666-1541 for information and listings of nearby ATV clubs. Save your pennies for your own transceiver and antenna, and get ready to hook up your VHS camcorder to operate your own television station... via Amateur Radio!

For a list of ATV and SSTV equipment suppliers and computer bulletin boards that feature ATV and ham radio, send an SASE to me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111. ■

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

It's the time of year to keep an ear on your local road department channels. When the weather gets inclement, the plows and road crews will make the going easier. By tuning in, you'll hear where the problems are, that is if the police and rescue trucks aren't there yet!

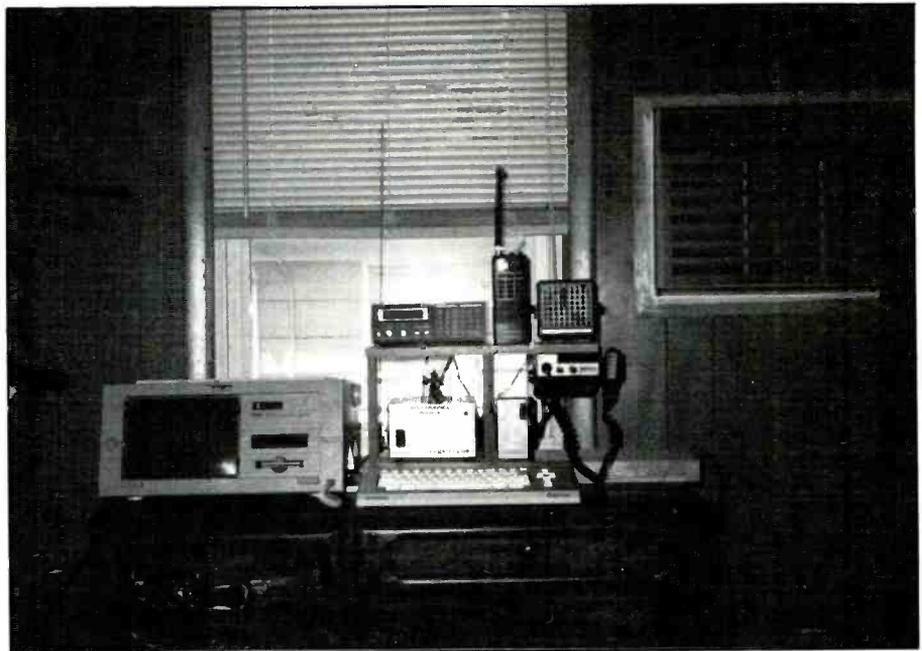
From Menasha, Wisconsin, Don Alesch, Jr., writes in to say that his town's police department, which dispatches on 155.610, is considering computer dispatching. He says that one officer claimed that if such a system were to be installed that "those scanner nuts won't have anything to listen to." Don wants to know if the officer's assumption is correct and if so, whether there is a way for him to upgrade his scanning gear—Bearcat 200XLT and 70XLT—to receive this information.

First of all, a lot of larger cities, and a few smaller ones, too, are using computers for dispatching purposes. If a police department, or fire department for that matter, wants to install computer terminals in its vehicles, it usually is to facilitate a way to decrease radio traffic that is carried out by voice. The system virtually is secure. Typically a department that begins computer dispatching sets up a new frequency for the computer terminals to operate on, usually on UHF or more lately, 800 MHz. By using repeaters, the system also would allow two mobile terminals to communicate between each other no matter where they were in a city. In order to install a system like this, it takes a lot of money and many cities don't have the cash at hand to undertake a project such as this these days.

The computer terminals usually are used for most motor vehicle recode information lookups and related data. For instance, if a police officer pulls over a car, he can type into the computer terminal to find the name and address of the owner and when the driver's license is at hand, he or she can check its validity. This information is relayed by the computer over the air to the main computer at public safety headquarters.

Police also may use the computer for status reports. For instance, a dispatcher may tell an officer that he is to respond to a report of a burglary. The officer may need only to type one key on the computer's keyboard that will alert the dispatcher that he or she is en route or on the scene. In addition, officers may wish to use the terminal to relay messages to each other.

There are a variety of computer dispatching systems that are on the market, however, there are none that I know of that any radio hobbyist has been able to tap into and decode that is already going out over the air. I know of one large county that experimented with packet computer transmissions at one time, much like the system that hams use to send computer data back and forth to each other.



Here's the equipment at Steve Parker's listening post in Baldwin, NY. Receivers include a Realistic PRO-2006, a Realistic PRO-41, a Realistic Jetstream Radio for aero monitoring, as well as CB gear.

Hams or others with packet gear could decode that information if they wanted to.

Because the systems are proprietary and because an individual system probably has to recognize coding from the receiver to validate its capability to decode the information, don't expect to run into someone who can decode

computer transmissions from police cars; I haven't found anyone yet.

Fire departments are another user of computer dispatching. The computer also offers status reports for fire vehicles, such as on-scene, and also would allow fire trucks to view maps on their screens, such as best routes to



Richard Kowalski, Registered Monitor, KCO0CH, of Grand Junction, Colorado, has a variety of receivers in his shack. One radio is a Regency R804 scanner.

an alarm, floor plans of a factory or data on hazardous chemicals that may be known to be stored in a building.

Steve Parker writes from Baldwin, NY, with some listening tips for Long Island. Steve suggests listeners monitor the following frequencies to keep abreast of all the action in Nassau County, NY: 478.7125, F7, detectives; 477.2875, F5, administration; 477.2625, F8, highway; 477.2375, F4, precincts 1 and 7; 477.3875, F3, precincts 2 and 8; 478.9125, F1, precincts 3 and 6; 477.2125, F6, precincts 4 and 5; 478.7375, Tac 10, car to car; and 153.740, helicopters, marine and medical communications. An additional frequency of note, Steve says, 147.210, a ham repeater. At 8:30 p.m. on Thursdays, a scanner and SWL net is called, and as Steve says, a lot of technical and frequency information can be heard by those who wish to tune in.

Richard Kowalski, KCO0CH, writes in from Grand Junction, Colorado, to say he has recently gotten back into monitoring the bands. Richard says that lately he has been monitoring the ham bands a lot and is studying to take his technician class exam soon. Richard says he hears a lot of utility stations and truckers using 49 MHz out his way. He's also a member of the 49 MHz Association.

From Maui, Hawaii, R. Souza writes in to ask whether it's possible to intercept network audio signals in Hawaii. He also inquires as to the frequencies that ABC, CBS, NBC, and CNN use. If you had a satellite dish, you could tune in unscrambled transmissions, both voice and audio. However, those frequencies are extremely higher in range than what any scanner or communications receiver can tune in. You could, of course, perhaps tune in the audio signals from your local television affiliate, if you listen in on wideband FM on your scanner. For instance, to hear the audio of Channel 15, listen to 481.750.

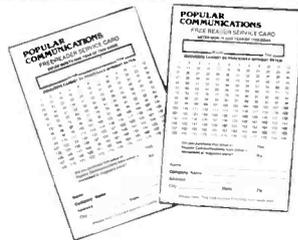
Ben Singely of Omaha, Nebraska, says he sometimes hears radio stations broadcasting live and wanted to know if they use radio to relay the show back to the studio. In today's wireless world, it's a pretty good bet radio is being used. At one time, a dial-up box was used to connect microphones at a remote to the radio station via phone lines. Today, you're more likely to see cellular phones used for remotes. The person doing the remote dials a phone number at the studio and the remote is on the air. Another form used in a lot of cases is using a radio to send the remote show back to the studio. These Marti transmitters, named for the company that sells the radios, relays a program from a remote over the air back to the studio. Typically, you can expect to find Marti and remotes on 161.64, 161.67, 161.70, 161.73, 161.76, 166.25 (outside a 150-mile radius of New York City) and 170.15 (outside a 150-mile radius of New York again). In addition, you're likely to find remotes in the 450-451 and 455-456 MHz bands, too, and don't overlook some who may use a range of channels around 153 MHz. The nice thing about remotes is that

they usually leave their transmitter on the air even when their remote is not being aired via the studio. Because the remote transmitter remains on the air, it makes it easy to hunt. And don't be surprised to hear all the banter that takes place off-mike when the remote isn't live.

Sam Weyland of Lenexa, Kansas, says that he reads about hobbyists tuning in fast-food drive-through window order boards, but he didn't know where to tune in these frequencies. Sam, you should first try 154.57 and 154.60. These are the two most popular channels used by order takers at drive-through windows. Likewise, others that pro-

ve popular include 30.84, 41.00 and 35.02. Another popular place for some order boards are in 12.5-kHz spaced channels in the 457-458 and 461-470 MHz bands. If you search around, they won't be hard to find because most emit a continual carrier even when inactive. They sure do drive nuts others who share their frequencies.

What are you hearing at home or on the road? What questions do you have? We welcome photos of your listening post, too, as well as those of dispatch points. Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909.



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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

On The Way Up: We like nothing better than seeing new antenna towers poking up into the air. Mark Schmit, of WCIB/101.9 (*Lite 102*), of Falmouth, MA tells us that they recently completed construction of their new 515 ft. tower, which is 200 ft. taller than the station's earlier tower. Mark says its an "incredible project to put up an antenna next to an existing one."

The higher antenna will substantially extend WCIB's coverage, blanketing all of Cape Cod and giving WCIB a voice from Provincetown to Providence (RI) with its 50 kW.

In other Cape Cod news, WXHR/93.5, in Harwichport, purchased Falmouth's WFAL/101.1 and is simulcasting over both. It's the first FM/FM simulcast in New England, according to Mark. With both stations running 3 kW, listeners can get *The Fox's Adult Contemporary* programming over a wider geographic area. The FCC's allowing smaller stations to simulcast like this is has been generally hailed as a great help.

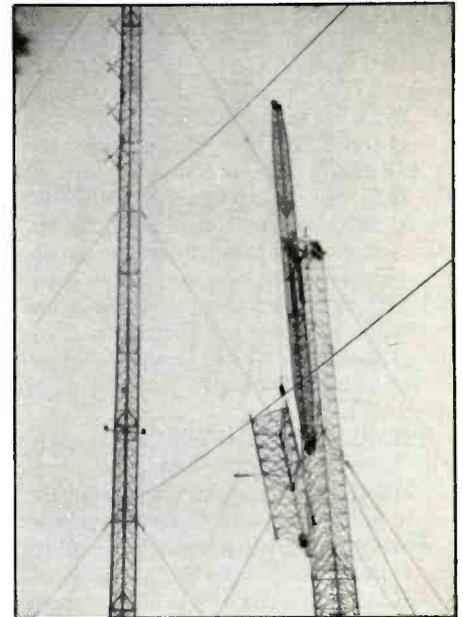
On The Way Down: We like nothing less than seeing antenna towers in pain. Last summer, Chicago's WBBM/780 was taken off the air for more than seven hours when a bolt of lightning zapped one of its towers, located in the northwest suburb of Itasca.

The jolt burned out the circuitry in an electrical panel, and WBBM couldn't return to the air until temporary cables could be safely put in place to bypass the panel.

Calling All DX'ers: The 12th Edition of the Brazilian Mediumwave, Shortwave, and FM station list is available. All stations are listed by frequency, call letters, power, name, loca-



The WCIB tower under construction is the short one at the right.



Lifting one of the WCIB tower sections into place. The old tower is at the left.

tion, and postal code. There are about 3,000 station entries.

This publication is \$4 (American money) or 8 IRC's, and may be ordered from Suriname DX Club International, Bechaniestraat 58, Paramaribo, Suriname.

Our Maine Man: From Don Hallenbeck, of Pittsfield, ME we learn that new station WSTG/94.3 calls itself *Star Radio* and has been advertising itself on Portland TV stations.

WWGT/97.9 got new owners who took a listener mail/phone survey to see about changing its Contemporary Hits format. Listeners liked the idea, so an oldies format was instituted and the station became WCSO, *Coast 98 FM*.

It's Greek To Me: If you're driving in central Florida and your radio suddenly breaks out into a language you didn't quite expect, then you have probably tuned to Clearwater's WLVU/1470.

Applications Filed For New FM Stations

AR	Hamburg	99.5 MHz	3 kW
IL	Ogelsby	102.1 MHz	
IN	New Washington	88.3 MHz	1 kW
LA	Richmond	100.9 MHz	
MI	Alma	90.9 MHz	100 watts
MN	Willmar	95.3 MHz	50 kW
NM	Carlsbad	106.1 MHz	50 kW
NY	Westport	102.5 MHz	
TN	Benton	93.1 MHz	6 kW
TN	Lafayette	104.1 MHz	3 kW
TN	Union City	105.7 MHz	6 kW
VT	Vergennes	96.7 MHz	3.4 kW
WA	Castle Rock	107.1 MHz	720 watts
WA	South Bend	105.7 MHz	3.5 kW
WA	Twisp	106.3 MHz	220 watts

New FM Stations Approved

AL	Fruithurst	102.7 MHz	6 kW
AL	Warrior	98.7 MHz	6 kW
AZ	Seligman	103.3 MHz	460 watts
CO	Pueblo	104.5 MHz	100 kW
FL	W. Palm Beach	88.1 MHz	50 kW
GA	Darien	107.7 MHz	50 kW
GA	Lumpkin	99.3 MHz	50 kW

GU	Agana	90.9 MHz	3 kW
ID	Ketchum	104.7 MHz	157 watts
IL	Arcola	107.9 MHz	6 kW
IL	Herrin	92.7 MHz	3 kW
IN	Churubusco	96.3 MHz	3 kW
KS	Topeka	90.3 MHz	11 kW
KY	Redcliff	103.5 MHz	3 kW
LA	Buras	91.9 MHz	3 kW
ME	Sanford	88.5 MHz	100 watts
MI	Port Huron	102.3 MHz	3 kW
NC	Wilmington	105.3 MHz	3 kW
SC	Belvedere	88.3 MHz	4.5 kW
TX	Howe	95.3 MHz	6 kW

FM Frequency Changes

KAFM	Red Lodge, MT	99.5 MHz to 99.3 MHz with 45 kW
KAWZ	Twin Falls, ID	89.5 MHz to 89.9 MHz with 7 kW

Applications To Modify AM Facilities

KFLG	Bullhead City, AZ	1000 kHz Seeks drop to 1 kW.
KZPM	Bakersfield, CA	1100 kHz Seeks daytime drop to 5 kW.
WCIN	Cincinnati, OH	1480 kHz Seeks drop to 1 kW, 114 watts at night.

Changed FM Call Letters

New	Was	
KALL-FM	KLCY-FM	Salt Lake City, UT
KARU	KQUF	Raymondville, TX
KARX	KQXB	Claude, TX
KAZO	KHUK	Soldotna, AK
KCML	KMMA	Hanford, CA
KGMV	KELE	Aurora, CO
KIAB	KBWG-FM	Boone, IA
KIAI	KNIQ	Mason City, IA
KILU	KHCR	Paaulo, HI
KIQK	KIQN	Rapid City, SD
KKAJ-FM	KKAJ	Ardmore, OK
KKCH	KMWC	Hayden, ID
KLCY	KUIN	Vernal, UT
KLLS	KQUI	Augusta, KS
KLQB	KBTR	Oracle, AZ
KMEZ	KNOK	Belle Chasse, LA
KMJK	KYNI	Buckeye, AZ
KNGA	KVRU	St. Peter, MN
KNTN	KVVV	Thief River Falls, MN
KSLD-FM	KUHK	Soldotna, AK
KTMX	KAWL-FM	York, NE
KUPU	KPCY	Pearl City, HI
KWEY-FM	KBXR	Weathersford, TX
KYIS	KZBS	Oklahoma City, OK
WCCK	WYTW	Cadillac, MI
WCQM	WNBI-FM	Park Falls, WI
WCRT	WXKF	Terre Haute, IN
WCOS	WWGT-FM	Portland, ME
WDML	WUID	Woodlawn, IL
WEGC	WIKX	Leesburg, GA
WEQR	WOKN	Goldsboro, NC
WHVL	WSEU	Hinesville, GA
WIMX-FM	WIMX	Harrisburg, PA
WJDQ	WJDQ-FM	Meridian, MS
WJFC-FM	WNOX	Jefferson City, TN
WJFK-FM	WJFK	Manasas, VA
WNHQ	WMDK-FM	Peterborough, NH
WNKR	WVEA	Williamstown, KY
WOFM	WEHM	Mosinee, WI
WOKD-FM	WXKT	Arcadia, FL
WPRJ	WSMZ	Coleman, MI
WQMR	WDLE-FM	Federalburg, MD
WQQT	WGEC	Springfield, GA
WSLE	WOBB	Cairo, GA
WTTH	WMXL	Margate City, NJ
WWGA	WZQD	Georgiana, AL
WXOD	WKBK-FM	Winchester, NH
WZXR	WFXX-FM	S. Williamsport, PA

Requesting Changed AM Call Letters

Now	Seeks	
KMDY	KCTQ	Thousand Oaks, CA
KREV	KXEQ	Reno, NV
WYTL	WJSH	Terre Haute, IN

Changed AM Call Letters

New	Was	
KANR	KSGR	Nampa, ID

KFVR	KCRE	Crescent City, CA
KKAJ	KVSO	Ardmore, OK
KIDD	KXDC	Monterey, CA
KKSB	KESP	Santa Barbara, CA
KNIN	KKCR	Wichita Falls, TX
KOPY	KGTN	Georgetown, TX
KOWA	KROL	Laughlin, NV
KRKE	KSNO	Aspen, CO
KSLD	KCSY	Soldotna, AK
KXOJ	KBLK	Sapulpa, OK
WIMX	WCMB	Harrisburg, MS
WJFK	WLIF	Baltimore, MD
WMGP	WQJC	Meridian, MS
WTSS	WSCR	Scranton, PA
WTSW	WBCR	Wilkes-Barre, PA
WWDF	WRBR	Richmond, MS

New FM Call Letters Issued

KCIA	Medford, OR
KGNR	John Day, OR
KILS	Minneapolis, MN
KLIP	Monroe, LA
KOLG	Agana, GU
KVLL-FM	Woodville, TX
KXLM	Oxnard, CA
KYBA	Stewartville, MN
KYBC	Comfort, TX
KYBD	Copeland, KS
KZQA	N. Little Rock, AR
KZQB	Davenport, IA
KZQC	Santa Rosa, CA
KZQD	Liberal, KS
WAYF	W. Palm Beach, FL
WCKS	Fruithurst, AL
WIMN	Waunakee, WI
WPAW	Pawley's Isl., SC
WQFN	Walker, MI
WSEW	Sanford, ME
WVZA	Herrin, IL
WVZB	Erie, PA
WVZC	Montauk, NY
WVZD	Dennysville, ME
WVZE	Battle Ground, IN
WVZF	Chillicothe, OH
WVZG	White Stone, VA
WXLH	Blue Mountain Lake, NY
WYAZ	Lumpkin, GA
WYNR	Darien, GA
WYPA	So. Boston, VA
WYPD	Green Bay, WI
WYPE	Smyrna, TN
WYPI	Lagrange, IN
WZEA	Hampton, NH

Requesting Changed FM Call Letters

Now	Seeks	
KJWL	KNNC	Georgetown, TX
WSEQ	WXEZ	Reidland, KY

WLVU is *The Greek Voice*, and serves the 300,000-strong Greek community in Hillsborough, Pinellas, and Pasco counties. On the weekends, the station presents programming in Polish, German, Italian, and even Gaelic.

Operating on a 24-hour daily sked, WLVU has been broadcasting for about 14 years. It's owned by the Angelatos brothers, Angelo and Sotrios. Their popular station has call-

tion, and lots of news from Greece.

Greece has no shortage of events taking place, including military and political, to keep listeners glued to their radios for the latest information. WLVU keeps its audience well informed.

Thanks go to Steve Myers, of Seffner, FL for letting us know about this interesting station.

Another Format Switch: Three years ago, Philadelphia area listeners were not at all

pleased when *Eazy-101* dropped its easy listening music format. Their prayers came true when the format was recently picked up by *Eazy-101's* sister station, *WEAZ/560, Wish 560*. The station brought back the easy listening music to replace its previous soft-hits music.

Wish 560 is an automated station, but listeners aren't expected to realize that computers run everything, including the recorded voices of the air personalities and the commercials.

This information via John Flack, Jr., of Mount Laurel, NJ.

Cause For Excitement: JT Communications, of 579 N.E. 44th Ave., Ocala, FL 32671-1421 has a new broadcast product. This is the FLM-100 replacement exciter, designed to replace the modulated oscillator, PLL, and crystal reference portions of older transmitters. Everything is on a single PC board.

The intent would be to bring new technology to old rigs, eliminating the need to spend unnecessary money on new transmitting equipment. The FLM-100 is on a 3-by-5 inch board and contains a direct-FM modulated oscillator that uses PLL technology. With a single crystal as the reference, frequency adjustment is controlled with dip switches.

The FLM-100 meets all FCC broadcast specs for frequency stability, noise, and distortion. It has both a composite and pre-emphasis input, and is fully stereo compatible. The maximum output level is +20 dBm. It operates from a single 12VDC power source. The FLM-100 operates in 100 kHz increments from 87 to 109 MHz, and a European model for 75 to 92 MHz operation is also available.

This device is \$170. For additional information, contact Jim Trapani at JT Communications. Let Jim know you learned about it here.

Complaint Against Broadcaster Dismissed: The FCC denied Michael Richardson's request to review its decision to dismiss his earlier complaint against FM station KFMH, Muscatine, IA.

Richardson alleged that KFMH violated federal law by broadcasting the locations of police roadblocks after a November, 1990, rock concert in Cedar Rapids, IA. He urged the FCC to take action under a provision of the Anti-Drug Abuse Act of 1986 that allows the FCC to "revoke any private operator's license issued to any person . . . who is found to have willfully used said license for the purpose of distributing, or assisting in the distribution of, any controlled substance in violation of any provision of federal law."

The FCC found no reason to change its original decision that no action on their part was required.

Three On A Match: In New York City, WNEW-FM is now simulcasting several hours a day in the upscale Hamptons area of Long Island via the facilities of a local station there. And, as we mentioned, this month, WFXR/WFAL are simulcasting on Cape Cod. Other



ATHLETICS 560 KSFO

If you're in the San Francisco Bay area, try KSFO/560. (Courtesy Walt Schivo, KB6BKN, Novato, CA.)



WKJC FM 104.7

In Tawas, Mich., it's WKJC on 104.7 MHz. (Courtesy Ron Texter, Registered Monitor KM18IO, of Warren, MI.)

stations simulcasting include KEST/KOBO in San Francisco and Yuba City, KSRF/KOCM in Newport Beach and Santa Monica. In fact, this has been a growing trend around the country.

In California, where great ideas often begin, the latest idea is to link up three simulcasting stations. This plan would have simulcasting over Arcadia's KMAX, Ventura's KAGR, and Fallbrook's KMLO, all operating on 107.1 MHz. The three stations would presumably provide a continuous signal blanket on 107.1 MHz from Santa Barbara in the north, to Escondido at the south. This is a 12-million person area covering a 200 mile distance along the coast, which includes Los Angeles.

Up All Night: The Sun Radio Network has the wit and wisdom of Stan Major on a nightly (Monday to Friday) program that runs from midnight to 5 a.m., Eastern Time. This is a live program with call-ins, not the usual tape delay of some earlier programs.

The coast-to-coast program goes out on the Sun Network (Spacenet 3, Transponder 17, 1.05 MHz SCS and Galaxy 2, Channel 3, 65.3 SCPC Audio), also on North America One (Spacenet 3, Transponder 5, 6.8 MHz wideband).

FCC Drops The Other Shoe: The long awaited FCC proposals for the use of the new 1605 to 1705 kHz AM band extension are quite interesting. The new band segment will contain 10 channels, which will accommodate somewhere between 200 and 250 stations. These stations will be limited to 10 kW daytime, 1 kW at night, and will be subject to operating under stringent new FCC interference standards.

The stations to be licensed on the new band will be selected from those already operating on other frequencies between 540 and 1600 kHz. The FCC wants to thin out the number of stations in the existing band and move some into the new band. They will be permitted to simulcast on both frequencies during a limited transition period (a few years) until receivers incorporating the new frequencies become generally available to the public.

The hope is that this will improve the lot of AM broadcasters, most of whom are having a rough time doing battle against the growing popularity of FM. Other FCC concepts looking towards pumping up AM include allowing (under certain conditions) one licensee to own two AM stations in the same local area, and also give preferential license consideration above 1605 kHz to those broadcasters who plan on operating in stereo.

We applaud the FCC's attention to helping AM stations stay a vital part of broadcasting.

Right now there are 4,987 AM stations licensed by the FCC, although certainly not all are actively operating.

Next Month: They keep saying that spring comes next month. I'll believe it when I see it, but for now I'm gripping the mike stand through my mittens. Keep sending in those bumper stickers and station photos. ■

PC HF FACSIMILE 6.0 \$99



NOW EVEN BETTER!

Version 6.0 has just been released. It is the most comprehensive fax image reception system for the IBM PC and compatibles. It includes an FSK demodulator, advanced signal processing software, tutorial cassette, and complete 250 page reference manual. The software includes the following advanced features:

Menu Driven
Start/Stop Tone Recognition
Unattended Operation
Tuning Oscilloscope
Resolution up to 1280x800x256 Levels
Programmable Colorization
Brightness and Contrast Control
Pixel Photometry and Histograms
Image Zoom, Scroll, Pan, Rotation

CGA,HGA,EGA,VGA & Super VGA
Time Lapse Frame Looping
Slide Shows
Export to PCX & GIF Files
Grayscale on all Popular Printers
Programmable IOC & Line Rates
Online Broadcast Database
Image Cropping
True Color Press Photos

PC GOES/WEFAX \$250

PC GOES/WEFAX 3.0 is our finest fax imaging system. It is compatible with both HF and direct satellite broadcasts from GOES, METEOSAT NOAA, SOVIET APT and C-Band services. It includes all of the above features plus a complete prediction system and advanced multispectral analysis software.
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PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Another big stack of logs this month, but before we get to them, a couple of station notes. The Voice of Bono says that, contrary to the item in my September column they are still alive and kickin'! He-Man radio says it is active, usually "prime time" on holiday weekends with 7415 the prime frequency.

The Alliance for Free Radio on 7415 was logged by Skip Harwood in California at 0320-0500 with the Radio Animal as host and mention of an address in Huntsville. Robert Ross of Ontario noted them at 0324. William Hassig heard what seems to be the same thing only with ID as the "Free Radio Association" from 0300 tune with rock, comments on free radio, the FCC and so on.

Radio USA found by Hassig at 0230-0345 on 7415 LSB with a "commercially produced" political program and a program produced by the Voice of Laryngitis at 0245-0315. USA noted by Pat Murphy of Virginia on 7414.65 at 0131 with political commentary and Mr. Blue Sky. Pat also had the Laryngitis program at 0253 on 7415 and so did Ross, at 0308. Christopher Kuhn of Maryland spotted them at 0258, and mentions that they gave the Battle Creek address (which has been out of operation for quite a long while—obviously an old tape). Jeff Seefeldt in Wisconsin heard the USA broadcast at 0100. It featured skits and musical variety, and had the Laryngitis broadcast at 0300.

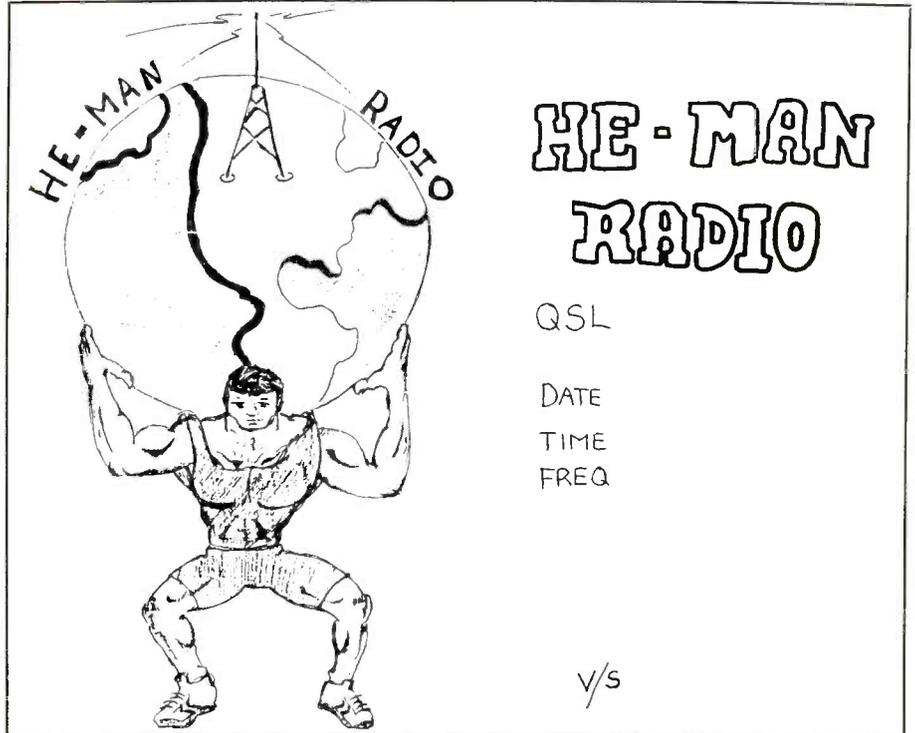
The Voice of Free America was found by Harwood at 0300 on 7415 with rock and mention of using 102.1 FM. It was also found by Edward J. Engelken in Texas, but mentioned an FM frequency of 101.5 and claimed 7415 covered North and South America. Off at 0320.

WORK (Workers Operating Radio Knobs) was heard by Laird Solomon in Ontario at 0224. Address as Box 452, Wellsville, NY 14895 and including commercials for Budweiser. This station's QSL comes in the form of a job application!

Solomon also heard the Revolutionary Voice of Plainsville on 7415 at 0207.

Paul I. Ecker in Louisiana heard something identifying as "The Car Show" at 0200 on 7420 and giving the Wellsville address. Program consisted of songs about cars, old auto commercials and other car-related items which ran until 0330 close.

Radio Beaver was bagged by Joshua Wilkes in Kentucky on 7415USB at 0135, characterizing itself as the anti-Brian Mulroney pirate station. Gave the Merlin address



He-man Radio says it's active on holiday weekends using 7415 as "prime frequency."

(PO Box 293, Merlin, Ontario N0P 1W0, Canada) and signed off with the theme from "Leave It To Beaver."

Ross heard Action Radio on 7415 at 0134 with "A.J. Michaels" as the host, 60's rock and the Wellsville address.

"He-Man" (of He-Man Radio fame) checks in with a couple of loggings: he had KBFA on 7420 at 0140 with host "The Archer" playing music by "Chicago." Also logged was Radio DC, "radio from inside the Beltway" on 7415 at 2345, playing music from the 40's. The announcer suggested reports to the ACE club bulletin.

Pat Murphy in Virginia has Omega Radio on 7415.6 at the unusual hour of 1300 airing Christian music and identifying as "The shortwave alternative, Omega Radio."

Pat also had the good fortune to hear Irish pirate radio fax on 6205 at 0321 with rock and 60's oldies presented by a female DJ. Ross had this one as well, on 6205 and 12255 from 0605-0625 with 70's rock, IDs and, at times, talk over the songs.

A second Europirate in Murphy's log this time was Live Wire Radio on 15050 at 0100 with DJ Bill Lewis greeting North American listeners and pirate broadcasters. Gave QSL addresses in Dublin, Ireland and Avon, England.

Pat also notes hearing rock music several times on 6840, a frequency that is often used by numbers broadcasts. Could be this is that BBC feeder which operates here, Pat. But with all the strange things in and around that area it's hard to make guesses without a solid ID.

Ross reports a station he thinks was identifying as WLR-White Line Radio on 7410 at 0206 with a "wide mix of music," mention of "America's newest..." and the Blue Ridge Summit address.

That'll do it for this time. Keep those pirate loggings and other pirate stuff coming my way and I'll do my best to pass along as much info as possible every month. Good to hear from several new reporters this month as well as some of the old stalwarts. ■

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

We have several times discussed the various pro and con factors involved in attempting to use a cellular for placing an emergency call to 9-1-1. While most of the time there's no problem, those times when problems arise are sufficient to make you realize that reliance on a cellular for emergencies has a way to go.

We were again reminded of this by Dayton, OH reader Ted Brown who told us of a news report he saw on Channel 9 TV in Cincinnati. Seems a motorist was driving on I-75 near Cincinnati when he saw another vehicle waver and pull off the highway. When he stopped to see what the problem was, he found the driver apparently having a heart attack.

Returning to his own vehicle, he got on his cellular and dialed 9-1-1 to summon aid. The response he got was, "You are calling on a cellular telephone." When he admitted to this obvious fact, the 9-1-1 operator said that she wasn't getting any location data on her screen. He said that it made no difference since he had given the exact location. She told him that he wasn't allowed to call 9-1-1 on a cellular.

Rather than wasting time arguing, he called either the police or fire department in the nearby community of St. Bernard. The dispatcher said that although the location was out of their jurisdiction, he was sending out an emergency crew as quickly as possible, anyway. The patient didn't survive.

Still, I don't want to toss cold water on the idea that in many instances, a cellular does bring help when you have a problem. Pat Griffith, NONNK, of Denver, CO tells me that when he was returning to Denver from a trip to the midwest, his car broke down ten miles east of Platte, NE. Unable to reach anybody on his 2-meter ham rig, he immediately got help via his cellular.

Air/Ground Phones

We continue to receive inquiries from readers asking about the bands used for air/ground phone service in airliners, inasmuch as they are obviously different than the standard cellular channels used by cars.

The ground stations operate in the band 849 to 851 MHz, with the aircraft using 894 to 896 MHz. Channel separation is 6 kHz, with the lowest ground voice channel on 849.016 MHz, and the lowest frequency paired aircraft voice channel on 894.016 MHz.

You may not hear a lot you can understand by running a scanner through these bands. There are six companies providing air/ground phone service to airlines, including two that appear to have the lion's share of the market. One of them (In-Flight Phone Corporation) has always used digital communications. The other company (GTE Airfone) is in the process of switching over to digital.



Ricoh sliced \$200 off the price of their mobile FAX machine, the PF-1.

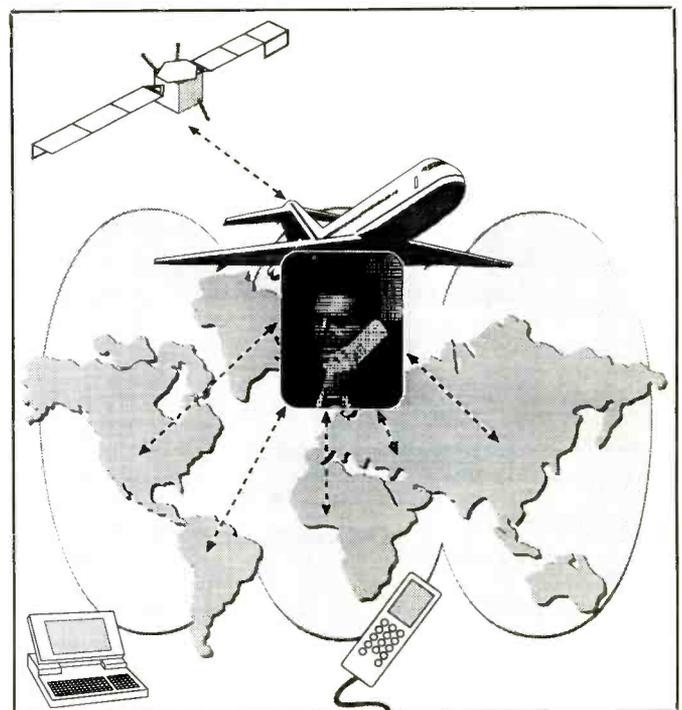
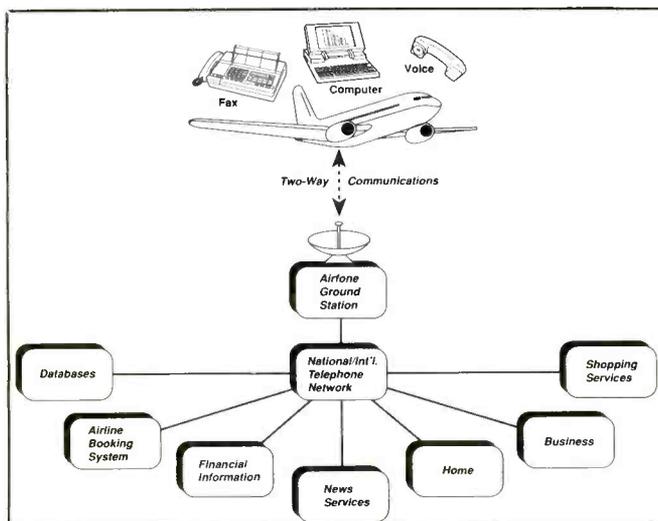
Digital comms can't be copied on present generation scanners, which will also make regular cellular calls gibberish inasmuch as eventually they will go digital, too.

In-Flight has now asked the FCC for experimental authorization to allow them to offer a dozen audio channels of live sports, news, and entertainment events which will be sent out to aircraft on a continuous basis. Although passengers would pay to hear sports events, the other channels would be commercially sponsored and offered at no charge to passengers.

In-Flight presently serves USAir, Midwest,

An arrangement made with COMSAT will extend GET Airfone's air/ground services throughout the world, via satellite.

The GTE Airfone GenStar System will offer a wide array of services via radio to airline passengers.





Tandy's new bagphone can be moved from car to car in minutes.



This new Motorola VHF marine transceiver even offers analog voice scrambling.

and American Airlines. They are located at 120 West 22nd St., Suite 100, Oak Brook, IL 60521.

Not letting any clouds grow under its wings, GTE Airfone notes that its own changeover to digital will make possible a new system called GenStar, offering a broad array of new voice, information, and computer/FAX services to airline passengers.

Passengers will be able to use FAX machines and lap-top computers with the air/ground phones. They will also be able to make conference calls, receive calls from the ground, and place calls to passengers in other aircraft. Also available will be message delivery, gate-connection information, weather forecasts, sports scores and information, airline and hotel reservations, shopping, financial news and stock-market reports.

Since GTE Airfone serves more than 1,500 airliners, it could take several years before all aircraft they serve are on line. Voice calls should be all digital by the time you read this, in any event. About a year from now, the enhanced cabin system will begin its deployment.

Presently, GTE Airfone operates on flights over the USA (including Alaska, Hawaii, and even southern Canada), and within 200 miles of the coastline. Arrangements with COMSAT will make this a seamless, global system via satellite technology.

GTE Airfone serves fourteen air carriers and is headquartered at 2809 Butterfield Road, Oak Brook, IL 60522.

Cellulars Around The World

Wow! We are being deluged with information relating to cellular expansion in various overseas areas.

Motorola Inc.'s Radio-Telephone Systems Group signed an agreement with the Posts and Telecommunications Industry Corporation (PTIC) of China. The hardware will be built at the PTIC's Hangzhou Factory. Cellular systems will be made operational in Beijing, Fuzhou, Harbin, Shandong, Shanghai, Taiyuan, Wuhan, Xiamen, and Zengzhou.

Millicom International Cellular was awarded a cellular license and the right to establish an international satellite telephone connection for car phones in Lithuania. A 450 MHz system will serve the nation's major population centers, including Vilnius, Kaunas, and Klaipeda, and eventually the entire nation. This system will permit subscribers to use it while roaming in Leningrad, Latvia, Estonia, and throughout Scandinavia.

US West has their Prague, Czechoslovakia, system operating. The first call on the system was placed by The Honorable Shirley Temple Black, our Ambassador to Czechoslovakia. The cities of Bratislava and Brno have also gone on line. US West also put the 450 MHz Leningrad system into operation.

Nokia-Mobira is furnishing the phones for the new cellular mobile communications network in Chile. The company also received a

\$12.5-million order to supply cellular phones for use in Spain.

Transmobile

The Tandy CT-1030 transportable moves easily from car to car. All you do is strap it to the car seat, plug it into the lighter, and you're ready to place and receive calls.

The CT-1030 features include hands-free operation, 30-number memory, scratch-pad memory, dual NAM, hi/low switchable power output, last call and cumulative timer, and tone service compatibility. It comes with a carry bag, built-in antenna, lighter plug, and coiled handset cord.

You can look this unit over at any Radio Shack retail store.

FAX On The Go At A Lower Price

Ricoh announced a \$200 price cut (to \$1,495) for its PF-1 portable FAX. The company says it's the world's smallest FAX, yet capable of dealing with full sized 8-1/2-inch by 11-inch letter-sized documents. It will fit inside a briefcase, and still leave room for other materials. This makes the PF-1 popular with mobile users, since it can be powered from a battery pack or car lighter, as well as standard 117 VAC house current.

It transmits a page in about 30 seconds, and can also be used as a copying machine. It holds enough paper for 30 documents.

Ricoh equipment is sold through many dealers. For more information, contact Ricoh Office Products, 5 Dedrick Place, West Caldwell, NJ 07006.

Ship Shape

Motorola unveiled a new line of portable marine VHF radios known as the Triton MP+ and the Triton MPC. These radios operate on all US/Canadian, and international VHF marine channels, and will receive all weather channels.

They offer a user programmable channel bank, allowing for the easy building of a preferred channel list. Despite their advanced features, which include hands-free VOX operation, they are user-friendly. The scanning feature can be programmed via the Dual Watch scan mode, the user bank scan, or the user bank scan with Channel 16 priority.

Other standard features include water, shock, and environmental resistance, an analog voice scrambler that may be switched on and off, and a battery that will operate for a full day on a single charge. A full line of optional accessories is available, too.

The new portable radios are available at local Motorola marine electronics dealers.

Ring Us Up!

Let's hear from our readers with cellular or other radiophone experiences and/or problems, newspaper clippings, and comments. We also like to hear from service suppliers, as well as from equipment manufacturers.

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Three new frequencies for radiofax weather chart transmissions were recently logged by this columnist. Fortunately, noise levels in the atmosphere caused by powerful solar activity became quiet enough to allow the signals to be heard and copied. RTTY monitoring, however, remained disappointing. But, after several months of experiencing disruptions to their signals some utility stations slowly returned to the airwaves.

NPN, the U.S. Navy base at Barrigada, Guam, was logged on 19070 kHz with weather charts from 1500 to 2100 UTC. Some of the weather charts depicted weather prognoses of the Middle East.

AFS, the U.S. Air Force Air Weather Station at Offutt Air Force Base, Elk Horn, Nebraska, sent many interesting charts on 19365 kHz (see figure 1) and on 23197 kHz from early in the morning to late in the evening local time. The station uses "KGWC" as its identifier for radiofax charts, as opposed to the "KAWN" identifier seen in RTTY transmissions.

Offutt had been running a fax operation on 19328 kHz for quite some time, and it continued to use that frequency along with the two others at the same time. Judging from the different quality of the printouts I received, the antennas used for each frequency appeared to be pointed in different directions. Also, the weather charts on each frequency differed in content from one another.

It was easy to determine that the frequency on the 23 MHz band was being used by Offutt, although some charts had the "KGWC" identifier. On this channel, many of the charts were plotted on maps of Europe, while the charts on the 19 MHz band were centered on the United States and on North America. Several of the charts took 30 to 40 minutes to complete, compared with about 15 minutes on 19365. The fax decoder settings for all charts was 120/576. The quality of the printouts on 23197 kHz was blurry, making it difficult to read the tiny print that described what the charts depicted. It was through a handwritten notation on one chart that enabled me to assume Offutt was the author of the charts. The hand printed word "trof" (for trough) seemed to match the printing of the same word on a chart I had seen on 19365 kHz.

The broadcast on 19365 was plagued with a lot of mishaps. The transmitter would be shut off, apparently by accident, while a chart was being sent. Then there would be a lengthy wait before the broadcast resumed and the chart could be completed. Occasionally a wrong chart would be sent, and the transmission had to be stopped while someone searched for the right one.

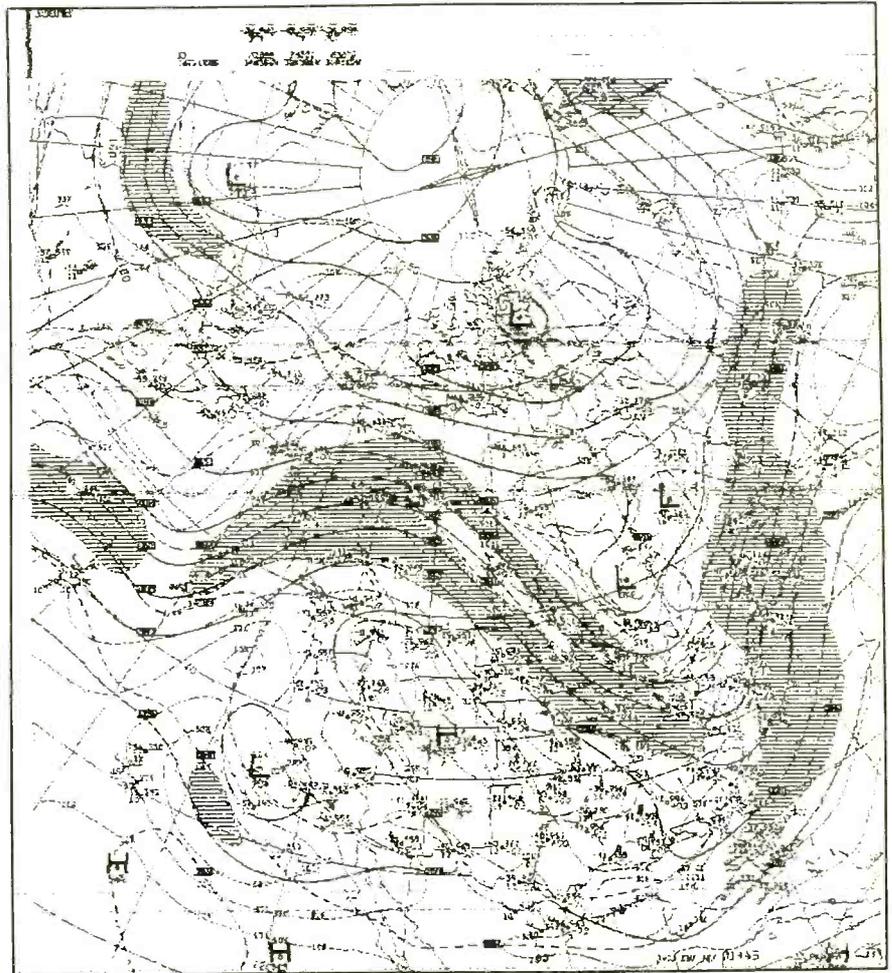


Figure 1

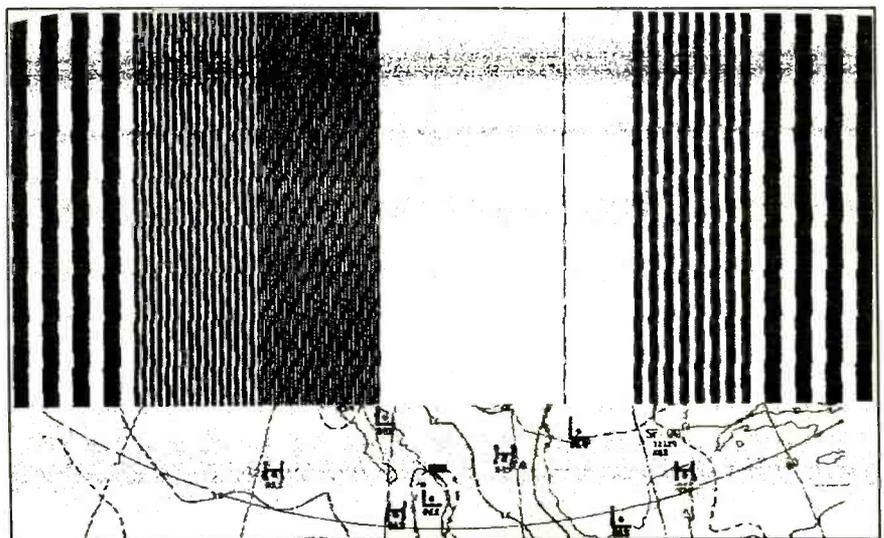


Figure 2

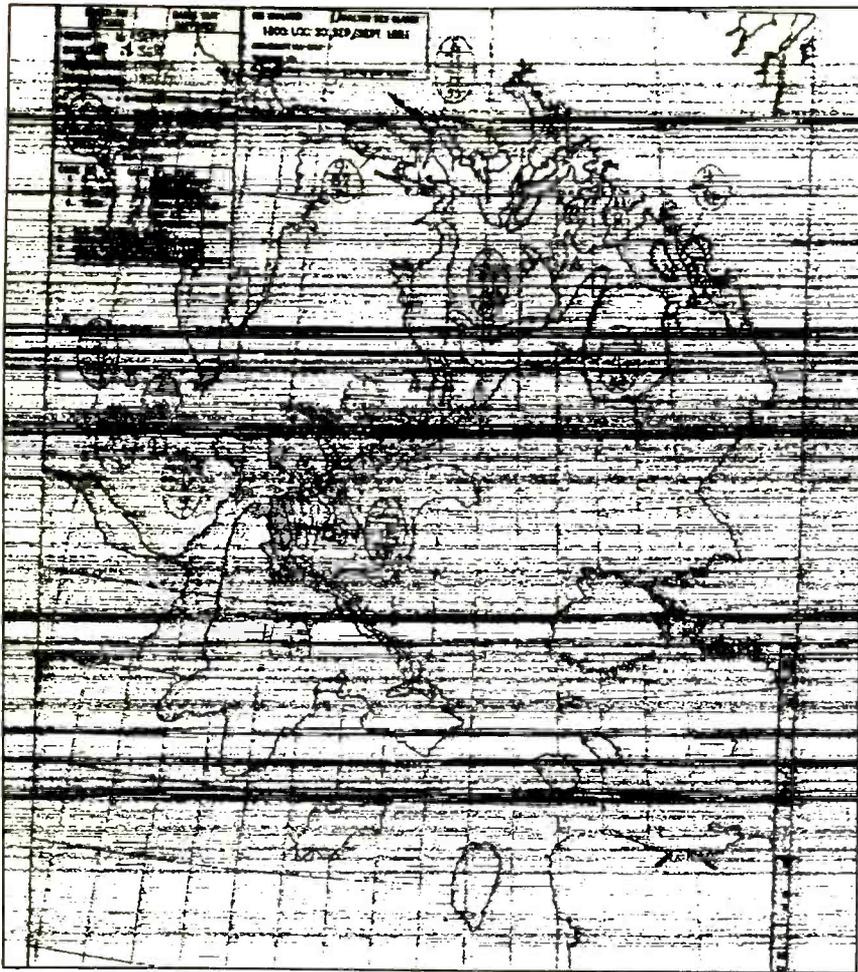


Figure 3

Scheduling seemed to be erratic. There was no consistency with the hours of operation either. One day I would hear the transmission at around 1400 UTC, but the following day I wouldn't hear it until around 1700. At least the mishaps were consistent.

A couple of times I witnessed apparent problems with the transmitter. Figure 2 shows what I witnessed on two occasions. In each case a weather chart was being sent when the signal began to sound sickly and warbly. The weather map suddenly became a series of stripes of different thicknesses. The first time I saw this happen, the malfunction continued nonstop for at least the next two hours. No one bothered to shut off the transmitter. I fi-

nally gave up waiting for the snafu to be corrected and turned my attention to other frequencies to monitor. The same problem cropped up about four days later, but the situation was quickly corrected in about 90 minutes.

There also seemed to be problems with the transmission on 23197 kHz. The first day I monitored the station it left the air abruptly at 1909 before a transmission in progress could be completed. A similar mishap occurred the following day, but this time it happened at 2007 while a chart was being sent.

I found another radiofax station by accident on 18245, but I never learned who it was. I was monitoring a station on that frequency

sending encryption in the FEC mode at 1702 UTC. Several minutes later it abruptly switched to FAX mode, and sent something until 1712. I caught only the end of the transmission, but there wasn't enough on the printout to determine what had been sent.

A couple of months ago I said that I hadn't heard a RTTY signal from Bucharest Meteo, Romania, for a long time, and wondered if the station still existed. It does, and it's been right where it's always been heard—on 4002 kHz. I guess its signal couldn't cut through the high noise levels found in the atmosphere last summer. There was no way I could get good copy of its signal in recent monitoring efforts, however. That's because it was being hammered hard by U.S. Air Force MARS CW stations that were on the same frequency.

The Canadian military is also vulnerable to the hammering fist of a telegraph operator. I was monitoring the radiofax transmission of CFH, Canadian Forces Meteo Center, Halifax, NS, one day at 0015 UTC on 6496 kHz, when I saw my printout being ruined by the CW marker of a maritime coastal station on the same frequency. The thick black bands in figure 3 show the time when the Morse Code was being banged out.

Another fax station that was plagued by manmade interference is that of NPN's on 19070 kHz, which I mentioned earlier in this column. Most of the time the frequency is quiet when NPN is in operation. On one occasion, though, the printouts I got were badly streaked with black lines (see figure 4), for at least 1555 UTC on the same frequency, but on lower sideband, could be heard the loud voice of RRG25, PTT, Moscow.

Bill Pearson of New Zealand reports that he recently bought an Apple II computer (used I presume), along with several software disks. One of the disks, labelled "RTTY machine," was "corrupted and will not load correctly," he said.

He asks any of this column's readers who might have this particular software to please send a copy to him along with details about the program. He says he does not know who released the software.

"As an electronics engineer," Pearson says, "I have constructed many different terminal units, including direct readout hardware terminals for both RTTY and CW, but obtaining suitable software is a difficult job here in New Zealand."

Readers with information may write to Pearson at 24 Brunton Place, Glenfield, Auckland, New Zealand."

In the meantime, Bill, you might want to make inquiries to these Apple computer users groups near you: (1) Apple Users Group International, PO Box 21477, Barrigada, Guam, 996921, and (2) Hong Kong Computer Society, 14th Floor, 485 Lockhart Road, Causeway Bay, Hong Kong.

For those of you with IBM PC and PC compatible computers, there is free software that drives a simple RTTY converter that is connected between a radio receiver's audio output and a computer's serial port.

Called "Ham Comm," the software was



Figure 4

written by W.F. Schroeder (DL5YEC) of Germany. A copy was given to me by a friend who told me it was downloaded by a colleague from an unidentified computer bulletin board system. My copy is version 1.3, released March 8, 1991.

Schematics for building a simple converter that can be driven by the software is included on the disk. Describing the converter, Schroeder says, "The receive circuit is basically an operational amplifier used to shift the audio input signal up to a level acceptable by an RS232 input. The supply current is drawn from the modem control lines DTR and RTS of the serial port. A separate power supply is not required.

"Four diodes form a standard bridge rectifier to protect the op-amp, since the state of the RTS and DTR lines is unknown at boot time and will change during program operation."

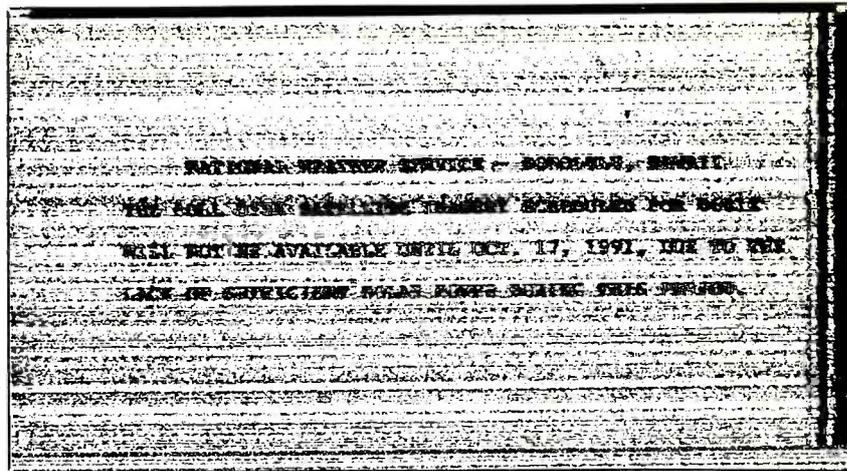
Modes supported are 45, 50, 75, and 100 baudot, and 110 and 150 ASCII. Shifts of 170, 425 and 850 Hz are selectable. A tuning indicator and center frequency adjuster are provided via a menu system. There is also a spectrum analyzer and audio frequency oscilloscope that is used in the computer's graphics mode.

Another RTTY program for MS-DOS computers is "Ultra RTTY," which costs \$20, plus \$2 postage and handling, and is available from Zenith Users' Group, PO Box 217, Benton Harbor, MI 49023-0217. Order it by part number 885-6012-80 if you use 3 1/2" disks, and by part number 885-6012-90 if you use 2" disks.

A reply to a letter from Charles Cavanaugh of Texas: You need a receiver with single sideband. RTTY is not transmitted on AM. Your receiver has to be able to tune in 100 Hz steps, not 5 kHz, as you say your receiver tunes, because a RTTY signal requires nearly precise tuning. Imprecise tuning will only give you badly garbled text. And that's not fun to read.

The book "The Hidden Signals on Satellite TV" by Thomas P. Harrington, W80MV, really makes for fascinating reading. The recently released third edition continues to whet my appetite and gives me the urge to buy my own satellite TV system. I'm a little jealous because I can't install my own system, and I won't be able to copy text and pictures as well as Harrington does. You see, I live in an area with lots of trees, which is a detriment to satellite TV viewing, for there must be a clear path for the satellite signal to reach the ground. I don't want to emulate the "Chain-saw Massacre" tactics of Mr. T., who felled nearly every tree on his Lake Forest, IL estate several years ago to the chagrin of the townspeople. So I'll have to be content in reading Harrington's book over and over again until the pages fall away from the binding. The first two editions of his book suffered also the same abuse in my hands.

For those of you luckier than I am, or even if you're in a situation similar to mine, you can have a copy of your "Hidden Signals" by sending \$19.95, plus \$3.00 shipping and han-



"National weather service - Honolulu Hawaii. The full disk satellite imagery scheduled for 0601Z will not be available until October 17, 1991, due to the lack of sufficient solar power during this period." Sent Sept. 19, 1991 by KVM70, Honolulu Meteo, HI on 11090 kHz at 0604UTC, 120/576.

dling, to Universal Electronics, Inc., 4555 Groves Road, Suite 13, Columbus, OH 43232.

Political change came suddenly and hurriedly to the Soviet Union last summer. It had a profound effect on the world stage and it's creating a headache for ye olde editor in assembling the loggings list. Three of the USSR's 15 republics, Estonia, Latvia and Lithuania, broke free from the union and were granted their long sought independence, or autonomy, but as of this writing, other governments haven't formally recognized the moves. Then there was a thought that the USSR might rename itself the Union of Sovereign States.

The problem I have, not being able to own a crystal ball, is trying to keep on top of the news while guessing what the situation would be in about five months, when you readers get your copies of the magazine. Being that it is a predicament for me to guess what the country's name will be in February, I've decided to play it safe by using only the name of the city and the republic it's in, and omit using "USSR." This is a temporary move that will remain in effect until the powers-that-be in Moscow, Russia, determine what the new geographical status will be.

Furthermore, those of you who look up call signs and stations in older frequency guides in identifying your loggings will have to remember that there has been some changes made to city names. Leningrad, Russia, is no longer Leningrad, but St. Petersburg.

Those city and republics often mentioned in utility station loggings are Moscow, Arkhangelsk, Khabarovsk, St. Petersburg, Kholmsk, Murmansk, Vladivostok, Novosibirsk, Kaliningrad, Nakhodka, and Novosibirsk, all in Russia; Kiev, Zhdanov, Odessa, Sevastopol, and Yalta, all in the Ukraine; Tashkent, Uzbekistan; Alma-Ata, Kazakhstan; and Tbilisi and Batumi, in Georgia.

The three Baltic states, that were former republics of the USSR, and the cities you'll find mentioned are Klaipeda and Vilnius in Lithuania; Riga, Latvia; and Tallin, Estonia.

RTTY Intercepts

518: Several stas heard w/NAVTEX info in FEC, 1618-2330. The stas were GNI, Niton R., England, at 1618; GCC, Cullercoats R., England, at 1648; GPK, Portpatrick R., England, at 1730; PBK, Netherlands Coast Guard, at 1950; OST, Oostende R., Belgium, at 2318; and SDJ, Stockholm R., Sweden, at 2330 (Ary Boender, Netherlands). For the remainder of Ary's loggings, Netherlands will be shortened to NLD—Ed.

2144: M/V Maersk Rover w/a shopping list to Gallanhead R., England, ARQ at 1550 (Boender, NLD). The vessel is a British tug w/the c/s GCNX—Ed.

2474: PBC32, Goeree Island Navrad, Netherlands, w/RVRY, 75 baud at 2034. (Boender, NLD)

2691: DHJ51, Grefeng Meteo, Germany, w/coded wx, 50 baud at 2023. (Boender, NLD)

2716: SAB, Goeteborg R., Sweden, sending an EZCX selcall in ARQ at 2116. (Boender, NLD)

3187.3: GXW, Portland Navrad, England, w/foxes & 10 count, 75 baud at 2200. (Boender, NLD)

3655: RVZ73, Arkhangelsk Meteo, Russia, w/coded wx, 50 baud at 0100. (Boender, NLD)

3717: Un-ID Interpolsta. w/a selcall of IPBV, ARQ at 2120. (Boender, NLD)

3806: Beacon "P," Kaliningrad, Russia, heard in CW at 2344, foll by coded RTTY msgs, 75 baud, & back to "P" in CW. (Boender, NLD)

4268.6: SAB23, Geoteborg R., Sweden, w/a selcall of TPXX in ARQ at 2144. (Boender, NLD)

4438: RFFA, Mindefense, Paris, France, w/msgs to Marseille, France, ARQ-E/72 at 2032. (Boender, NLD)

4442.5: RGC72, Kiev Meteo, Ukraine, w/coded wx, 50 baud at 2133. (Boender, NLD)

4489: GFL26, Bracknell Meteo, England, w/coded wx at 2137, 50 baud. (Boender, NLD)

4497: SOE349, Warsaw Meteo, Poland, w/coded wx at 2140, 50 baud. (Boender, NLD)

4788: 6VU26, Dakar Meteo, Senegal, w/coded wx, 50 baud at 0100. (Hetherington, FL)

5329.8: Un-ID with results from an election that took place somewhere in the U.S. on 9/19/91. Was ARQ, 0300-0307. (Ed.)

6314: WLC, Rogers City R., MI, w/wx, football skeds & standings, and college football spreads, FEC at 1355. (Ed.)

6316: WLC w/a marine wx forecast for the Great Lakes, FEC at 2018. (Ed.)

Abbreviations Used in The RTTY Column

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

- 6736: ETD3, Addis Ababa Aero, Ethiopia, w/RURY, 50 baud at 004. (Hetherington, FL)
- 6920: RAT25, Moscow Meteo, USSR, w/wx data for Turkey, 50 baud at 0037. (Harold Manthey, NY)
- 7428.8: Telam, Buenos Aires, Argentina, w/nx in SS at 0215, 50 baud. ("Bunky," IL)
- 7625.7: TZH, ASECNA, Bamako, Mali, w/RURY, 50 baud at 0030. (Manthey, NY)
- 7658.2: YZD, Tanjug, Belgrade, Yugoslavia, w/RURY, 50 baud at 0357. (Ed.)
- 7685: RBV75, Moscow Meteo, USSR, w/RURY at 0022, 50 baud. (Manthey, NY)
- 7860.4: PWN33, Natal Navrad, Brazil, w/RURY & SSGS to ship c/s PWJP. Was 75 baud at 0125. (Manthey, NY)
- 7887: BZS27, Xinhua, Yuryumqi, China, w/RURY at 0010, foll by a nx BC at 0030, 75 baud. (Hetherington, FL)
- 8085: RVL21, Khabarovsk Meteo, Russia, w coded wx, 50 baud at 2115. (Boender, NLD)
- 8165: 5YD7, Nairobi Aero, Kenya, w/aero wx, 75 baud at 1528. (Boender, NLD)
- 8166: "LMS" w/RURY & ID, + "dpm lok nv sriicc

DE WLC ROGERS CITY MICHIGAN
 1618EDT 17 OCT 91
 GREAT LAKES MARINE FORECAST
 NATIONAL WEATHER SERVICE CLEVELAND OH
 400 PM EDT THU OCT 17 1991
 WEATHER SYNOPSIS FOR THE GREAT LAKES
 24 HOUR FORECAST POSITIONS BEGINNING AT 7 PM EST THURSDAY...DEEP LOW PRESSURE 29.00 INCHES OVER JAMES BAY WITH A COLD FRONT TRAILING ACROSS EASTERN LAKE SUPERIOR TO KANSAS WILL MOVE OFF NORTHEAST QUEBEC WITH THE FRONT PUSHING SOUTH OF THE GREAT LAKES. HIGH PRESSURE 30.25 INCHES OVER SOUTHERN ALBERTA AND NORTHERN MONTANA WILL MOVE TO NEBRASKA BY THE END OF THE PERIOD WITH A RIDGE EAST ACROSS THE GREAT LAKES. ADDITIONAL 12 HOUR OUTLOOK...THE HIGH PRESSURE WILL CONTINUE TO BUILD AND EXPAND SOUTH AND EASTWARD TO COVER MOST OF THE COUNTRY BY THE END OF THE PERIOD.

MAFOR 1721/
 SUPERIOR WEST 1/2...GALE WARNING IN EFFECT...11550 13750 13757 13747 WAVES 6 TO 12 FEET. 220612
 SUPERIOR EAST 1/2...GALE WARNING IN EFFECT...12550 12760 13757 11747 WAVES 6 TO 11 FEET BUILDING TO 10 TO 15 FEET TONIGHT. 220611
 MAFOR 1721/
 MICHIGAN NORTH 1/2...GALE WARNING IN EFFECT...12550 11750 13757 11737 WAVES 8 TO 14 FEET SUBSIDING TO 6 TO 10 FEET ON FRIDAY AFTERNOON. 220814
 MICHIGAN SOUTH 1/2...GALE WARNING IN EFFECT...12450 12750 14747 WAVES 5 TO 10 FEET. 220510

MAFOR 1721/
 HURON NORTH 1/2...GALE WARNING IN EFFECT...13550 19440 14740 11730 SCATTERED RAIN AND SNOW SHOWERS FRIDAY. WAVES 6 TO 11 FEET SUBSIDING TO 5 TO 9 FEET LATE TONIGHT AND TO 4 TO 8 FEET FRIDAY. 220611
 HURON SOUTH HALF...GALE WARNING IN EFFECT...14550 19440 13740 11730 WAVES 6 TO 11 FEET SUBSIDING TO 5 TO 9 FEET LATE TONIGHT AND TO 4 TO 8 FEET FRIDAY. 220611
 MAFOR 1721/
 ERIE 14520 11520 19620 11620 12730 WAVES 2 TO 4 FEET BUILDING TO 3 TO 5 FEET FRIDAY. 220204.
 MAFOR 1721/
 ONTARIO 12910 19510 12520 11620 11630 12740 WAVES 1 TO 3 FEET INCREASING TO 2 TO 4 FEET TONIGHT AND TO 6 TO 8 FEET FRIDAY. 220103.
 END OF MAFOR/WLC/SS
 1624EDT 17 OCT 91

WLC, Rogers City Radio, Michigan, which handles shipping on the Great Lakes, sent this marine weather forecast on 6316 kHz at 2018 UTC in FEC mode.

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iperor Ira nv agn." Was 75 baud at 1520. (Boender, NLD)
8471: UYN, Arkhangelsk R., Russia, w/mgs at 1420, ARQ. (Boender, NLD)
8534: WLO, Mobile R., AL, w/a tlc list in FEC at 1830. (Mark Mustard, TN)
8541: URB2, Klaipeda R., Lithuania. w/RURY, 50 baud at 2045. (Boender, NLD)
8556: SAB44, Goeteborg R., Sweden, w/seicall EZXS, ARQ at 1435. (Boender, NLD)
8595.7: CCS, Santiago Navrad, Chile, w/a 5L msg, 100 baud at 1015. (Hetherington, FL)
8677.5: URD, St. Petersburg (formerly Leningrad) R., Russia, w/ARQ phasing sig + CW ID at 0436. (Ed.)
8718: EAD, Aranjuez R., Spain, w/a tlc list at 2100, ARQ. (Boender, NLD)
9041.4: 5YE, Nairobi Meteo. Kenya, w/coded wx, 100 baud at 0222. (Ed.)
9090: RDZ75, Moscow Meteo, Russia, w/coded wx, 50 baud at 1743. (Boender, NLD)
10911.2: VER, Canadian Forces, Ottawa, ON, w/encryption, ARQ-M2/96, channel A, at 1436. (Ed.)
10918: 6WW, French Navy, Dakar, Senegal, w/"non protege" tlc in FF, ARQ-E3/48 at 0335. (Ed.)
11139: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in SC, 75 baud at 0545. (Ed.)
11322.2: Un-ID w/RURY, 5L grps. & some wds in SS, at 0050, 50 baud. (Hetherington, FL)
12265: BZR62, Xinhua, Beijing, China, w/nx in EE, 75 baud at 1430. (Manthey, NY)
12579: NMO, USCG, Honolulu, HI, w/a high seas wxcast from NWS, Honolulu, FEC at 0730. (Ed.)
12753: Un-ID w/a long msg containing 5L grps. ending 1230 w "pse qsl qru sk," 50 baud. (Hetherington, FL)
12905.5: UMV, Murmansk R., Russia, "w letter and number combinations 02D, 03C 06C 08W. . ." Was 75 baud at 0400. (Mustard, TN) Not UMV, Mark, but GYA, Royal Navy, London, England—Ed.
13316.2: Un-ID w/5F mgs, 50 baud at 1914. (Don Schimmel, WV) Possibly CLP1, MFA, Havana, Cuba, which has been noted with 50 baud xmsns on nearby freqs of 13314.5, 13317, & 13217.5 kHz—Ed.
13428.2: Un-ID w/badly garbled 5L grps, 75 baud at 1658. (Ed.)
13432.2: Un-ID w/encryption at 1857 & 2048, ARQ. (Ed.)
13489.6: RCG77, Tass, Moscow, Russia, w/nx in AA, 2255-2259, ending the day's sked, 50 baud. (Ed.)
13545: Un-ID w/encryption, ARQ at 1834. (Ed.)
13737: 5YD, Nairobi Aero, Kenya, w/RURY, 50 baud at 2312. (Mustard, TN)
13813.6: CXR, Montevideo Navrad, Uruguay, w/mgs in SS to PWX, Brasilia, Brazil, 75 baud at 0040. (Hetherington, FL)
13996.5: STK, Khartoum Aero, Sudan, w/RURY, 50 baud at 2225. (Mustard, TN)
14383.5: Un-ID w/encryption, ARQ-E/192 at 2003. (Ed.)
14508: D4B, Sal Aero, Cape Verde. w/RURY, 50 baud at 2220. (Mustard, TN)
14573: Jana, Tripoli, Libya, w/nx in AA at 1653, 50 baud. (Manthey, NY)
14593.8: JAL54, Kyodo, Tokyo, Japan, w/RURY, 50 baud at 1052. (Schimmel, WV)
14605: VKX, Canberra, Australia, w/RURY, 75 baud at 1500. (Manthey, NY) Sorry, Harold, it's not Canberra. The VKX c/s used on this freq is a tactical one. This sta. has appeared here in the past w/5F grps. Then it was 50 baud, now I see you got it at 75—Ed.
14626.8: FUF, French Navy, Fort de France, Martinique, w/"controle de voie." ARQ-E3 at 0519. (Ed.)
14635.3: FUF, Fort de France, w/5L grps at 1800, and a msg in FF at 1819, ARQ-E3/100. (Ed.)
14688.2: MFA, Bucharest, Romania, w/encryption at 0512, ROU-FEC/164.5. Went to CW for s/off at 0513. (Ed.)
14786.5: 9PL, Kinshasa Aero, Zairo, w/aero wx, 50 baud at 2355. Logged two days before Kinshasa's airport was destroyed by rioting soldiers, who were angered by their low pay and went on a rampage. (Ed.)
14792: Un-ID in an unidentified RTTY mode that was a 2300-Baud asynchronous sig. Heard at 2344. (Ed.)
14807.3: Un-ID w/encryption that mostly uses the letters B, M, O, V, Z, W, X, and Z. Was 75 baud at 1130. (Ed.)
14820.7: CLP1, MFA, Havana, Cuba, w/EFE, AP, Tass, UPI, & PL nx in SS, + crypto after ZZZZ, to Embacuba Nicaragua. Was 75 baud at 1352. (Ed.)
14875: "Controle de voie" msg at 2337 says it's from

BARS 8,08 41.1 CENT (VICKI ROACH)
 JAMES 1,84 9.4 PE
 DISTRICT ATTORNEY -TH CRT
 AR PERCMORAN 7,645 T ANEY 3,901 39. PERCENT
 FERRIS 4,247 38 PCENT
 HLTN 753 7 PERCENT
 OGLE 0 04:3,5
 OUMB 9 PERCENT
 USE-DIT 5
 NUCCOLLS 200 PCEN
 ADE U 13CENT
 WEISSINGER 97.7 PERCENTSTA DSTRIC 5 ADEMOCRTS)
 FAWS 3,256 034:3,5
 934 22 PERCENT
 CIRCUIRASHLEY 5,345 47 PERCENT
 CUKIN 3,20 CEDDOLAN 2,752 ERCENT
 SUPERSOR - 8548:5 9,3 (EMOCRAT)
 9/ : 17 PERCT
 484
 PE
 OM ODWRD 1,192 5 03:
 34=8'94 TR15433 -(3.9:4-AT)
 ? 3 15 03: 9.4:3,
 JACKSON I PERT
 OVEN 28 PCENT
 278 PERCENT
 BHERS 301 .4 PERCENT
 FEVISOR -DISTRICT FOU
 B ROOKS I UL 3.5:
 A 1,0 4. PERCENT
 LAUDERDT
 JXQQQHYFMQJHONGMWP PERCENT
 ELISON JR. 5 1 03:3,5
 GEGE 599 2 0:N 38 14:3,20 PERCENT
 WIO
 IYKT
 Q
 QYR

These election results from somewhere in the United States were sent Sept. 19, 1991 on 5329.8 kHz, at 0300-0307 UTC, in ARQ mode. Does any reader know where this election took place? Please let us know.

RFLI, French Navy, Fort de France, Martinique. In reality, the msg was being relayed back to Martinique from Paris, France. Mode was 100/ARQ-E3. (Ed.)
14989: TNL77, ASECNA, Brazzaville, Congo, in ARQ-M2/96 mode with aero wx & a service msg in EE on channel B at 0622, and aero wx on channel A at 0629. (Ed.)
15751: CNM66, MAP, Rabat, Morocco, w/nx in EE, 50 baud at 1215. ("Bunky," IL)
15801.5: Possibly MFA, Paris, France, w/5L mgs, 1225-1315, ARQ6-90/200. (Ed.)
16000: CNM69, MAP, Rabat, Morocco, w nx in EE at 1215, 50 baud. ("Bunky," IL)
16106: FZM62, DIPLO, Noumea, New Caledonia, w nx in FF, 50 baud at 1255. ("Bunky," IL)
16136: BZR66, Xinhua, Yuryumqi, China, w/nx in EE at 1320, 75 baud. (Manthey, NY)
16165.3: RFFA, Mindefense, Paris, France, w mil. tlc in FF, aero wx, 5L mgs, and navareas, ARQ-M2/200, channel A, at 2135. At the same time, and also later at 0030, on channel B, was found nx items in FF from French newspapers. (Ed.)
16246.8 & 16248.1: VOA, Tangier, Morocco, w/RURY to Greenville, NC, 75 baud at 1408. (Ed.)
16303.8: CLP1, MFA, Havana, Cuba, w/prensaminex & crypto at 2130, 50 baud. ("Bunky," IL)
16321: CLP5, Cuban Embassy, Algiers, Algeria, w/nx in SS ending at 0000, 50 baud. (Hetherington, FL)
16693.5: ELAT2, the Liberian-registered bulk carrier,

African Gardenia, w/tlc to Curacao Radio via WCC, Chatham R., MA. Was ARQ at 1900. (Ed.)
16702: 7TJA, the Algerian merchant ship Bachir Chihani, w/telexes, ARQ at 1430. (Ed.)
16765: HCIO, the Ecuadoran merchant ship Ciudad de Guayaquil, w/ARQ tlc at 1348. (Ed.)
16819.5: NMN, USCG, Portsmouth, VA, w/ARQ phasing sig + ID in CW at 1830. (Ed.)
18037: Un-ID Bulgarian diplo w/handtyped mgs & tlc in Bulgarian, 75 baud at 1624. (Ed.)
18038: MFA, Sofia, Bulgaria, w/5F grps, 75 baud at 1744. (Ed.)
18038.3: Bulgarian Embassy, Havana, Cuba, w/tlc at 2027, 75 baud. (Ed.)
18040: TCY4, AA, Ankara, Turkey, w/nx in Turkish, 50 baud at 1245. ("Bunky," IL)
18050: RQV70, Tass, Moscow, Russia, w/nx in FF, 50 baud at 1645. ("Bunky," IL)
18055: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in SC, 75 baud at 1452. (Ed.)
18125: RND70, Tass, Moscow, USSR, w/RURY at 1640, 50 baud. ("Bunky," IL)
18169.5-18171.1: KNY26, Hungarian Embassy, Washington, DC, w/5F grps, DUP-ARQ at 1427. (Ed.)
18221.5: CNM76, MAP, Rabat, Morocco, w/nx in FF at 1640, 50 baud. ("Bunky," IL)
18230: GFL25, Bracknell Meteo, England, w/coded wx, 50 baud at 1655. (Ed.)
18245: Un-ID w/crypto in FEC mode at 1657. (Ed.)

18363.5: 9PL, Kinshasa Aero, Zaire, w/RURY, 50 baud at 2340. ("Bunky," IL)

18385: RRQ20, Tass, Alma-Ata, Kazakhstan, w/nx in EE at 1240, 50 baud. ("Bunky," IL)

18388.6: 5AF, Tripoli Aero, Libya, w/NOTAM's at 1546, 50 baud. (Ed.); and RURY + "QJHLLTYF" at 1640. ("Bunky," IL)

18405: RCT57, Tass, Nikolayev, Russia, w/nx in EE at 1240, 50 baud. ("Bunky," IL)

18496: CNM80, MAP, Rabat, Morocco, w/nx in EE, 50 baud at 1313 (Ed.); and in AA at 1630. ("Bunky," IL)

18600: FUJ, French Navy, Noumea, New Caledonia, w/RURY, SGSG, & 10 count to FAAG, 75 baud at 1401, foll by "non protege" tfc in FF. (Ed.)

18602.7: VOA, Greenville, NC, w/RURY, 75 baud FDM, at 1354. (Ed.)

18640: Un-ID w/crypto that uses mostly the letters M, P, Q, V, and W. Was 50 baud at 1327. Went to CW at 1335. (Ed.)

18972: Un-ID Yugoslav sta. w/nx in SC at 1500, 75 baud. ("Bunky," IL) It's "DFZG," MFA, Belgrade—Ed.

19057: MKD, RAF, Akrotiri, Cyprus, w/a test tape, 50 baud at 1750. (Hetherington, FL)

19091.9: CLP1, MFA, Havana, Cuba, w/tfc to CLP28, 50 baud at 1905. (Hetherington, FL)

19361: Un-ID using a new type of TTY mode with a speed of 300 baud at 2200. No sync in packet radio or ASCII modes. (Ed.)

19529: JMG5, Tokyo Meteor, Japan, w/coded wx, 50 baud at 1500. (Manthey, NY)

19575.8: Un-ID idling, 1543 to past 1643, FEC-A/96. (Ed.)

19649: RCF, MFA, Moscow, Russia, w/RURY & 5L/5F grps, 75 baud at 1441. (Manthey, NY)

19698: OST, Oostende R., Belgium, w/an ARQ phasing sig & an ID in CW at 1402. (Ed.)

19821.7: 4UZ, UN, Geneva, Switzerland, w/tfc in EE, ARQ at 1408. (Ed.)

19822: 5AF, Tripoli Aero, Libya, w/aero wx, 50 baud at 1407. (Ed.)

19980: 9BC22, IRNA, Halghedharreh, Iran, w/nx in EE at 1510, 50 baud. (Ed.)

19982: Un-ID w/5F grps, 75 baud at 1215. (Hetherington, FL)

20062.2: VOA, Munich, Germany, w/tfc to Greenville, NC, 75 baud at 1300. (Hetherington, FL)

20085: ISX20, ANSA, Rome, Italy, w/nx in FF, 50 baud at 1448. (Manthey, NY)

20132.1: "DFZG," MFA, Belgrade, Yugoslavia, w/nx in SC at 1300 + 1340, 75 baud. (Hetherington, FL)

20139.3: Un-ID embassy of an Asiatic country w/5L msgs at 1912, 50 baud, foll by "QRU" at 1915 & to CW. (Hetherington, FL)

20152.8: PWX33, Brasilia Navrad, Brazil, w/RURY & msgs to LOL, 75 baud at 0145. PWX33 was using a new automatic transmitter, which was learned in a s/off msg that read, "... estaba testando mi nuevo transmisor automatico. ..." (John Robinson, TN)

20157.3: 5KM, Bogota Navrad, Colombia, w/RURY/SGSG, & IWAG-91 msgs to CXR a month before the annual wargames began. Was 75 baud at 2015. (Ed.)

20401.5: Indonesian Embassy, Dar-es-Salaam, Tanzania, w/tfc in ARQ at 1315. (Hetherington, FL)

20456.5: "C37A" testing w "6XMS," 100 baud at 1315. (Hetherington, FL)

20619: OMZ, MFA, Prague, Czechoslovakia, w/diplo tfc in Czech, 100 baud at 1253. (Manthey, NY)

22353.5: URXW, the Soviet cargo ship "Mousson," w/telegrams to Kaliningrad R., Russia, 50 baud at 1854. (Ed.)

22354: UGTM, the Soviet cargo ship "Motovsky Zaliv," w/telegrams to Murmansk R., Russia, 50 baud at 1858. (Ed.)

22354.5: EVWJ, the Estonian cargo ship "Priliv," w/telegrams to Kaliningrad R., 50 baud at 1938. (Ed.)

22355.5: LYIB, the Lithuanian merchant ship "Osora," w/telegrams in RR to Kaliningrad R., 50 baud at 1927. (Ed.)

22373: EWIJ, the Soviet cargo ship "Kandalakchii Zaliv," w/telegrams to Sevastopol R., Ukraine, 100 baud at 1400. (Ed.)

22380.5: CBV, Valparaiso R., Chile, w/ARQ phasing sig & CW ID at 2223. (Ed.)

22381: WLO, Mobile R., AL, w/ARQ phasing sig + ID in CW at 2223. Other freqs it uses at the same time are 22403, 22404, 22406, & 22407 kHz. (Ed.)

22403: WLO, Mobile R., AL, w/ARQ phasing sig +

ID in CW at 2259. Also operates in both modes on 22404, 22406, 22407 kHz. (Ed.)

22382.5: KPH, San Francisco R., CA, w/ARQ phasing sig & CW ID at 2226; and in FEC at 2306. (Ed.)

22385.5: WNU, Sidell R., LA, in FEC, 2234, & CW, 2243. (Ed.)

22386.5: WCC, Chatham R., MA, in FEC, ARQ & CW modes, 2245-2250. (Ed.)

22391.5: HPP, Panama Intelcom R., Panama, in ARQ & CW modes at 2253. (Ed.)

23193.5: Un-ID in Great Britain w "EGWR" aero wx data, 75 baud at 1347. I'm sure our European readers already have an QTH on this one. Please let me know. (Ed.)

23556: MFA, Rome, Italy, w/tfc in II & FL grps to Brasilia, Brazil, for relay to Buenos Aires, Argentina. Was ARQ-E/96 at 1545. (Ed.)

23992: CCM, Magallanes Navrad, Chile, w/RURY, SGSG, & foxes, 50 baud at 1400. (Manthey, NY)

25315: CTW95, Monsanto Navrad, Portugal, w/RURY & foxes at 1313, 75 baud. (Hetherington, FL)

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News From Moscow

The recent coup in Moscow stunned everyone except a few CIA analysts. Even students of that mysterious empire on the other side of the world were taken by surprise. Though a military, KGB, or GRU coup is always a possibility in Moscow it should not have surprised us considering the seriousness of their economic troubles. It was no less a shock, however, to see so powerful a nuclear Superpower become so destabilized through political and economic collapse.

Looking back another indication of trouble brewing in Moscow may have been the slowing of the mail. During an eight month period just prior to the coup, it was impossible to get a letter out of Moscow to the US. Within 3 weeks after the coup the mail was moving again.

Fortunately these developments seem not to have had much effect on the Soviet Amateur Radio Satellite program. Moscow has announced plans for what may be a new class of Amateur satellite. Tentatively identified as RS-15 (RS stands for Radio Sputnik) the new satellite will carry the same transponder complement as the current class Amateur Satellites, RS-10/11 and RS-12/13. These include a 2 to 15 meter transponder known as A mode, a 15 to 10 meter transponder known as K mode, a 15 to 2 meter transponder known as T mode, a 15 to 2 & 10 meters known as KT mode, a 15 & 2 meter to 10 meter transponder known as KA mode and the usual assortment of beacon and robot frequencies. The telemetry, power output and operation will be similar to its predecessors.

The only real difference in the new spacecraft is its predicted orbit. Unlike the RS-10/11, 12/13 which have an altitude of 621 miles (1,000 km), an inclination of 83° and a period of 105 minutes, the RS-15 will have an altitude of between 1,500 and 1,900 miles (2,500 to 3,000 km) with an inclination of 69° and a period of 140 to 150 minutes.

If this latest information from Moscow is correct, and as you know any preliminary information on a space launch is subject to change, the Amateur Radio transponder RS-15, will be riding on a different host spacecraft than any of its predecessors. The only other, and more likely, possibility is that RS-15 will be a dedicated, self-contained satellite. RS-3 through RS-8 were self-contained satellites. Each had its own unique orbit. The Current Satellites, RS-10/11 and RS-12/13 are Amateur Radio transponders that have been attached to a host spacecraft which is used in other services. For example, RS-10/11 is attached to a navigation satellite. No

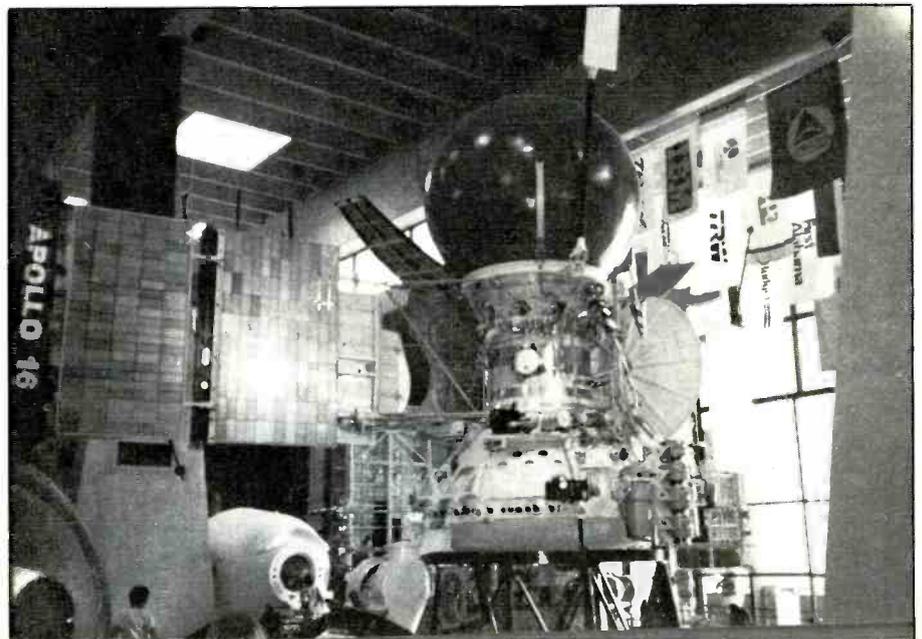


The Molniya carries two dish/horn antenna combinations that operate at 800 MHz and 1 GHz.

known class of Soviet satellites currently use these orbital parameters. This may be an indication that the RS-15 will be a dedicated spacecraft.

RS-15, like all RS spacecraft, will carry a robot. This is an automated system which

consists of a computerized CW transponder. It is a single channel transponder with one uplink and one downlink frequency. The A robot on RS-10 has an uplink of 145.820 MHz and a downlink of 29.357 MHz. The robot must be addressed in CW with the prop-



Variations of the Venera spacecraft have been used as deep space probes, gamma ray telescopes and Mars orbiter.

TELEMETRY DELINEATED

The telemetry is sent in cw. It represents various status indicators and measurements made on the transponders. There are 16 channels sent. Each channel sent is in format of 3 alpha characters followed by 2 numeric characters. For example, "IMS45". The "IMS" part is the alpha and the "45" is the numeric part for a specific feature. In the example "IMS45", the "IMS" part gives a specific status for channel 4, 21 mhz receiver status "IMS" means the 21 mhz receive is off. If, however, "IMS" is replaced with "IMU" in channel 4 as in "IMU45", then the 21 mhz receiver is activated (is on). The numeric part of channel 4, "45" in our example, gives the AGS level on the 15 meter receiver where the value in volts equals the number sent divided by 5. That is, volts = $n/5$ or $45/5=9$ volts.

TELEMETRY DELINEATED

CH. NO.	Alpha 1	Alpha 2	Alpha 3	Alpha 4	Description	Alpha 1	Alpha 2	Alpha 3	Alpha 4	Description	
1	IIS	IID	IIR	IIG	TLM data source sampling period 90 minutes 10 minutes Power supply voltage over sample period where $V = n/4$ volts	9	AIS	AID	AIR	AIG	Status of 1st Memory board = off = on $n-10$ = degrees C 10 meter transmitter temp.
	IIU	IIK	IIW	IIO		AIU	AIK	AIW	AIO		
2	INS	IND	INR	ING	2 meter receiver with -20dB attenuator in 0 dB attenuator in $n/10 = W$ (in Watts) - output power of 2m transmitter	10	ANS	AND	ANR	ANG	Status of 2nd Memory board = off = on $n-10$ = degrees C 2 meter transmitter temp.
	INU	INK	INW	INO		ANU	ANK	ANW	ANO		
3	IAS	IAD	IAR	IAG	15 meter receiver with -120dB attenuator in 0 dB attenuator in $n/10 = W$ (in Watts) - output power of 2m transmitter	11	AAS	AAD	AAR	AAG	There is any info in 1st Memory There is not any info in 1st Memory $n-10$ = degrees C 20 volt power supply temp.
	IAU	IAK	IAW	IAO		AAU	AAK	AAW	AAO		
4	IMS	IMD	IMR	IMG	15 meter uplink off 15 meter uplink off $n/5 = V$ (in volts) - 15 meter receiver AGS voltage	12	AMS	AMD	AMR	AMG	There is any info in 2nd Memory There is not any info in 2nd Memory $n-10$ = degrees C 9 volt power supply temp.
	IMU	IMK	IMW	IMO		AMU	AMK	AMW	AMO		
5	NIS	NID	NIR	NIG	2 meter receiver off 2 meter receiver off $n/5 = V$ (in volts) - 2 meter receiver AGS voltage	13	MIS	MID	MIR	MIG	Output info from memory via beacon 2 via beacon 1 $n-5$ = volts Control parameter backup 9v power supply
	NIU	NIK	NIW	NIO		MIU	MIK	MIW	MIO		
6	NNS	NND	NNR	NNG	Special command station channel off Special command station channel on $n/5 = V$ (in volts) - Special command station AGS voltage	14	MNS	MND	MNR	MNG	Attenuator of 15 meter ROBOT receiver = -10dB = 0 dB $N/5 = V$ (in volts) Voltage of 15 meter ROBOT receiver
	NNU	NNK	NNW	NNO		MNU	MNK	MNW	MNO		
7	NAS	NAD	NAR	NAG	Output power of 10 meter beacon 1 is Max Min $n/3$ - Service command parameter	15	MAS	MAD	MAR	MAG	Attenuator of 2 meter ROBOT receiver = -10dB = 0 dB $N/5 = V$ (in volts) Voltage of 2 meter ROBOT receiver
	NAU	NAK	NAW	NAO		MAU	MAK	MAW	MAO		
8	NMS	NMD	NMR	NMG	Output power of 10 meter beacon 2 is Max Min $n/3$ - Service command parameter	16	MMS	MMD	MMR	MMG	Output power of special command channel = Max = Min $n = 00$ there are not 32 QSO in ROBOT log $n = 80-99$ there are one or some pages of qdo's in ROBOT log
	NMU	NMK	NMW	NMO		MMU	MMK	MMW	MMO		

RS 12/13

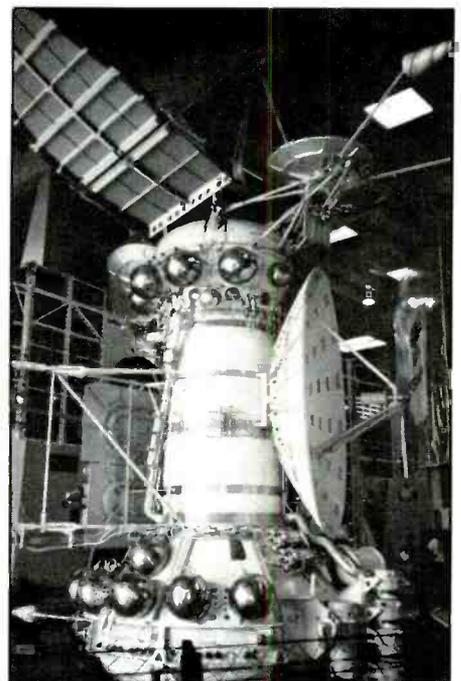


The Molniya 1 satellite is a military comsat that uses a highly elliptical orbit.

gram and TNC to decode it for you. It will tell you things like the temperature of the transmitter, voltages, memory condition and content, etc.

RS-15 will have an inclination of 69°. This is much lower than the current 83° orbit used by the other satellites. But the altitude is the most interesting factor of the orbit. This will be the highest orbit ever used by the Soviets. It should increase the communications range considerably. With an altitude of somewhere between 800 and 900 miles. RS 5 through 8 would allow US Amateurs in the eastern half of the country to talk to western Europe. Soon Moscow and other points east could be in our radio horizon.

The Soviet Amateur Radio satellite program has always been robust, it's government funded, and innovative. They have been able to keep a fleet of LEO satellites in orbit since 1979. In addition, they have innovations such as using lower frequency bands (15 meters) to encourage Amateurs world-wide to try space communications with little or no additional investment in equipment. 15, 10 and 2 meter equipment is readily available world-wide. RS-15 will follow a grand Soviet tradition in space.



Seven antennas adorn this variation of the Venera design. The spheres are fuel cells.

er protocol. The robot will confirm your QSO with a number, give you a signal report and a goodbye. The QSO number will, if sent to Box 88 Moscow, get you a QSL card from the robot.

Each of the satellites has a CW beacon. This is used to communicate the satellite's condition and that of its systems to the Moscow ground station RS3A. With the attached chart you can decode the telemetry yourself. You must know CW or have a computer pro-

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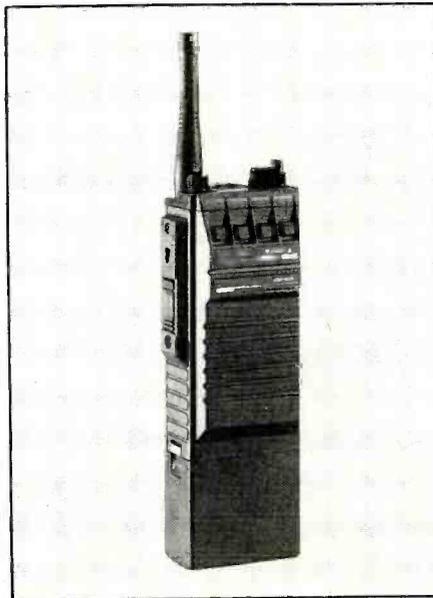
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NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



UHF Portable

REL M Communications announced the RSP400, a UHF version of its popular RSP500B portable radio.

The RSP400 is a 20 channel, 4 watt, synthesized, portable radio which features REL M's revolutionary Instant Priority™ button.

Regardless of operating mode, one touch of the easily accessible, top mounted Instant Priority™ button places the RSP400 instantly in the manual mode at the highest power available and on the highest priority channel giving the user absolute, immediate com-

Datametrics Announces Computer Control For Advanced ICOM R9000 Receiver

Datametrics, Inc. has developed a version of its Computer Aided Scanning (CAS) system for ICOM's R9000 communications receiver. The system enables a PC compatible computer to control the R9000 and adds numerous benefits such as development and disk storage of frequency lists utilizing database concepts.

Datametrics system manages all the R9000's advanced features including: computerized squelch control, gain control, signal strength and other useful control settings.

The system is comprised of a hardware interface (connects to the PC's serial port) and software system. The units retails for \$1,599.

For more information contact Datametrics Inc., 2575 S. Bayshore Drive, #8A, Coconut Grove, FL 33133.

munications control in an emergency situation.

The Instant Priority channel can be programmed by the dealer to a specific channel or to track the user selected priority channel. As an option, the RSP400 can be programmed so that when the radio's priority mode is activated, the radio will always transmit on the priority channel.

The RSP400 is track tuned for continuous 450-482 MHz operation and can be programmed in 12.5 kHz channel increments to accommodate 25 kHz channel spacing. CTCSS and DCS (regular and inverted) signalling formats are built-in. Two-Tone Sequential and DTMF capability can be added as options.

The RSP400 is very user friendly thanks to its unique, reversible, top mounted display. In normal operation, the display reads left to right from the front of the unit. When belt mounted with the optional remote speaker/mic attached, the display actually reverses itself so it continues to read left to right to the operator. In this configuration, the internal speaker is electronically disconnected so all audio is routed through the external speaker or earpiece.

Four soft rubber function keys control all radio field operations and provide for fast, convenient channel selection by allowing the user to step up or down through its twenty channels. They are mounted in a beveled faceplate for easy accessibility in either handheld or belt-mounted operation. The top-mounted on-off volume and squelch knobs are rubber sleeved and knurled for accurate, non-slip grip.

The RSP400 incorporates special fast scanning technology which allows it to scan through its 20 channels at a rate of up to 40 channels per second. CMOS technology adds extra life for the snap on-off battery. It is currently undergoing evaluation for Mil-Spec 810 C&D certification and D.O.C. approval for Canadian import.

Like all REL M products, the RSP400 carries a two-year limited warranty. For more information, contact REL M Communications, Inc., 77070 Records Street, Indianapolis, IN 46226.

Lightning Strike Preventer

Electron Processing announced a useful product designed to reduce the chances of lightning striking a radio tower or mast. Lightning strikes cause tremendous damage and reducing the probability of a strike to your tower is a wise move. The Lightning Reducer model LRU-1 prevents the buildup of high



cloud to tower voltages responsible for lightning strikes. Static charges are discharged into the air via the hundreds of pointed discharge spikes on the LRU-1 before these static charges can build up enough voltage to produce lightning. Installation of an appropriate number of LRU-1's and proper grounding of your tower can lead to an almost total elimination of the chance of lightning striking your tower. Each LRU-1 consists of a six inch diameter discharge head mounted on a 12" long bracket with a U-bolt for mounting on masts (or tower legs) up to 2" in diameter. Mounting brackets for larger masts are also available.

The LRU-1 is priced at \$40 with a "three pack" (normally recommended configuration for towers 30-100') model LRU-3 priced at \$99. There is an additional shipping/handling charge. For additional information, contact Electron Processing, Inc. at PO Box 68, Cedar, MI 49521 or circle 101 on our Readers' Service.

New Frequency Counter

Optoelectronics, Inc., announces a new frequency counter with full range operation, 1 mV sensitivity and resolution to display 10 Hz in 3 GHz.

"Our new Model 2810 Frequency Counter is a fast, high resolution instrument that operates from sub-audio to 3000 MHz," notes Optoelectronics President Ms. Linda Hufft, "This is the mar-

ket's lowest priced, full-range, 10-digit, hand-held counter with an LCD readout. It's battery operated, packaged in a rugged aluminum extrusion, has an available backlight for convenient use in the field," she said, "and it's fast."

Model 2810 detects frequencies up to 200 MHz and resolves them to 1 Hz in 1 second flat. Frequencies up to 900 MHz are resolved to 1 Hz and displayed in 4 seconds. Frequencies up to 3 GHz are resolved to 10 Hz and displayed in 1.6 seconds. Four different gate times (0.01 sec, 0.1 sec, 1.0 sec and 10 sec) are available by means of a front panel selector switch.

Sensitivity is specified at better than 1 mV for signals up to 200 MHz, and better than 10 mV for signals up to 2400 MHz. The unit is operable up to and beyond 3000 MHz.

Input antennas or lab probes connect to either of two pushbutton-selectable BNC connectors, providing either high input impedance (1 Megohm) for signals up to 50 MHz, or standard 50 ohms input impedance for signals from 1 MHz to 3000 MHz and beyond.

Model 2810's time base is a 10 MHz crystal oscillator, but its options include a ± 2 PPM temperature compensated crystal oscillator for extra high stability. A second NiCad battery pack is available to double the operable field time to 4 hours or more. The unit's available backlight for its liquid crystal display is implemented with a high-efficiency electroluminescent panel and driven with high-efficiency 400Hz inverters. This makes it very kind to the batteries while in the field.

Model 2810 weighs a mere 15 ozs and occupies less than 30 cubic inches (5.3 x 3.9 x 1.4 inches).



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WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

FCC Proposes Additional 72-76 MHz Low-Power Mobile Frequencies

The Commission has proposed to increase the number of frequencies in the 72-76 MHz band for low-power mobile use in the Manufacturers Radio Service.

Under Note 572 of the Commission's rules, the frequency 75.0 MHz is assigned for aeronautical marker beacon use and provides that until December 31, 1989, internationally, administrations should refrain from assigning frequencies to stations of other services in the adjacent bands of 74.6-74.8 MHz and 75.2-75.4 MHz (guard bands). These guard bands were established to protect older design airborne marker beacon receivers from interference by transmitters operating immediately adjacent in frequency.

The Manufacturers Radio Frequency Advisory Committee, Inc., (MRFAC) asked the Commission to increase the number of 72-76 MHz frequencies available in the Manufacturers Radio Service for low-power use. With the expiration of the footnote 572 constraint, MRFAC proposed that the two guard bands be channelized to create 18 additional frequencies for low-power use.

The Commission, however, has proposed channelizing the two guard bands into 20 channels rather than 18 as requested by the MRFAC. The new frequencies would be subject to the same rules applicable to those frequencies in the 72-76 MHz band currently designated for low-power mobile use.

FCC Fee Collection Regulations Generally Upheld

The Commission has generally upheld its fee collection program (Fees II) which it adopted to implement the provisions of the Consolidated Omnibus Budget Reconciliation Act of 1989. In response to the issues raised by petitioners concerning the fee filing procedures adopted by the FCC and the applicability of specific fees, the Commission made the following modifications.

Although the Commission did not abolish the use of a lockbox bank for fee processing, or, alternatively, change lockbox bank locations to Philadelphia or establish a lockbox bank in Washington, the Commission noted that, if the Treasury Department, which has primary jurisdiction over the appropriate criteria for lockbox banks, were to enter into a lockbox agreement with a Washington bank, the Commission would revisit this issue to consider the use of a Washington facility for receipt of FCC fees.

A number of petitioners proposed that applicants be given the option of "split" filings

by sending the fee check and FCC Form 155 to the lockbox bank, while the underlying application or other filing is submitted directly to the FCC. The Commission said it considered this system in Fees II, including the use of bar coded or pre-numbered fee forms. Since this option would require the matching up of fee payments and underlying filings, it would use substantial commission resources, delay substantive processing, and create a potentially significant source of errors. Nevertheless, the Commission determined that because of continued interest in filing in Washington, D.C., it was looking into a split filing procedure that would minimize the Commission's resources involved.

Petitioners recommended extending the voluntary back-up filing procedure set out in Fees II to all filings, or at least to all "deadline" filings. Fees II established a back-up filing procedure under which applicants may submit an unofficial copy of certain time critical applications, together with evidence of timely shipments to Pittsburgh, to the Commission in Washington to be date stamped and retained by the Secretary's Office. The Commission said that to extend the back-up procedure to all deadline filings would so substantially increase the burden on the Commission's record keeping and storage resources that it could not feasibly adopt this proposal. The Commission agreed with commenters that it is appropriate to reduce documentation provided with the back-up filing procedure, and amended the Commission's rules accordingly.

The Commission also agreed with a petitioner that Congress did not intend the \$4,660 "accounting and audit" waiver fee to apply to requests for waiver of tariff rules and requirements included in Part 69. The Commission noted that the costs of such waivers will generally be included in the fees established for tariff filings and it amended the Commission's rules accordingly.

The Commission concurred with a petitioner's request for the issuance of guidelines to clarify what constitutes a field audit and an attestation audit.

The Commission also consented to petitioners' request that applicants for a vacant FM allotment in the mass media services under the "first-come, first-served" rule be given a fee refund where such applicants request the dismissal of their application upon learning that there is a previously filed pending application for the same vacant channel since delays in updating the Commission's computer data base make it impossible to determine if another applicant has already applied for the channel. The Commission specified that the refund request must be filed within fifteen days of issuance of an FCC Public Notice indicating that the first such previous-

ly filed pending application was received but not yet accepted for tender.

A number of petitioners argued that Congress intended to exempt noncommercial educational (NCE) broadcast stations from payment of a \$35 fee with applications for Restricted Radiotelephone Operator Permits (RPs) when such applications are filed by persons intending to work at NCE stations. The Commission stated that although the RP application fee is to be paid by the individual applicant, not the station, it appears that the imposition of the fee will ultimately inure to the detriment of NCE stations that rely heavily on volunteers who may be unwilling or unable to pay the fee. The Commission agreed that an exemption from the RP application fee for persons at NCE stations would be consistent with the intent of Congress in exempting NCE stations from other fees. The Commission said that because the RP is a lifetime permit to operate certain radio transmitting equipment in addition to transmitters at NCE stations, the exemption will have to be tailored to prevent fee exempt applicants from using the permit for other purposes.

The Commission also endorsed petitioners' position that neither the statute nor its legislative history indicates an intent to charge a fee for previously licensed Point-to-Point Microwave facilities that are subsequently modified, where the modification does not involve a new frequency. The Commission clarified that its rules do not contemplate a fee in such circumstances.

In addition, the Commission made editorial changes to the rules to correct incorrect references to FCC Form numbers and fee amounts and has decided to publish the full text of all fee decisions in the FCC Record.

The rule changes will become effective immediately upon release of the Memorandum Opinion and Order. The Commission will commence publication of all fee decisions in the FCC Record within 60 days.

Rules Proposed For Implementing Advanced Television (ATV) Service

The Commission proposed policies and rules for implementing Advanced Television (ATV) service in this country.

"ATV" refers to television technology that provides improved audio and video quality or enhances the current television broadcast system. "ATV" embraces both High Definition Television (HDTV) and Enhanced Definition Television (EDTV).

Current television transmission is referred to as NTSC, after the National Television Systems Committee, an industry group which developed the current standards. Today's action builds upon a previous Commission deci-

sion that ATV should operate in a standard 6 MHz channel (this is the bandwidth currently used for television) and that this ATV channel would be independent of the existing channel currently used for television transmission.

The Commission has asked for comment on the following proposals:

Initial Eligibility—Since the goal of this proceeding is to provide major technological improvement in television transmission rather than to establish a new and distinct video broadcasting service, the Commission proposed restricting initial eligibility for an ATV frequency to existing broadcasters. Once ATV assignments to this group are made, the Commission would eliminate this restriction. Existing broadcasters would have three years from the time that ATV allotments are made to apply and two years from award of a CP to construct.

Initial Assignment of ATV Frequencies—The Commission proposed treating all ATV frequencies as equivalent and described the following possible approaches to assigning channels:

—Allot ATV channels to each community and, simultaneously, randomly assign particular ATV channels to existing NTSC licensees in that community; or

—Allot ATV channels to a community and permit licensees to apply on a first-come, first served basis during an initial filing "window." Competing broadcasters would be "randomly ranked" so that the top-ranked would be granted its first choice, etc.

The Commission also sought comment on whether, in addition, it should:

—Permit parties to negotiate changes among themselves after award of an ATV frequency; or

—Adopt a financial qualification showing as a condition for awarding an ATV frequency.

While the Commission expects there will be sufficient spectrum for all ATV applicants, it proposed that, in the case of a shortfall, it would go to decisional criteria or a lottery to determine which applicant would prevail.

Spectrum Issues—The Commission said there should be no need to use vacant non-commercial channels for ATV except, possibly, in a small number of cases. However, low power and translator stations will be displaced to some degree in the major markets. The Commission proposed continuing low-power and translator stations' secondary status vis-a-vis full-service stations.

Conversion to ATV—Broadcasters must convert entirely to ATV, i.e., surrender one 6 MHz frequency and broadcast only in ATV, when ATV becomes the prevalent medium. It proposed three possible methods: (1) schedule conversion a specific number of years after a nationwide penetration rate for ATV receivers is received; (2) require conversion when penetration rates reach a certain level on a market-by-market basis; or (3) simply establish a date for conversion, allowing consumers sufficient time to purchase new

receivers and adjust to this new transmission form.

The Commission proposed issuing no new NTSC licenses once initial ATV assignments have been made.

The Commission also sought comment on whether requiring simulcasting would be an appropriate means of protecting existing consumer investment in television equipment.

This action is the fourth in a series designed to articulate a regulatory approach to ATV. The Advisory Committee on Advanced Television Service, an industry committee formed in 1987, also plays an integral role in this regulatory process. The Advisory Committee is currently directing the testing of six proponent ATV systems and will ultimately make a recommendation to the Commission regarding their performance.

Action by the Commission October 24, 1991, by Notice of Proposed Rulemaking (FCC 91-337). Commissioners Sikes (Chairman), Quello, Marshall, Barrett and Duggan, with Chairman Sikes issuing a separate statement.

Cordless Telephone Manufacturing And Importation Requirements

This public notice is issued in response to numerous inquiries concerning recently enacted changes in the Rules relative to cordless telephones, adopted in the REPORT and ORDER, docket 89-605, FCC 91-12, released January 25, 1991.

Paragraph (d) of the new Section 15.214 adopted in the above proceeding requires all cordless telephones to contain circuitry which makes use of a digital security code to provide protection against unintentional access to the public switched telephone network by the base unit and unintentional ringing by the handset.

Effective September 11, 1991, the new paragraph (e) of Section 15.37 prohibited the manufacture and importation of cordless telephones not complying with Section 15.214 (d). Cordless telephones that have been previously certificated and that, without modification, already contain digital security coding circuitry, need not be recertificated.

A new Section 68.200 (k) was also adopted. This section requires an application (FCC Form 730) for registration of a cordless telephone operating under the provisions of Part 15 of the Rules to be accompanied by a statement indicating that the device contains appropriate provision for protection of the public switched telephone network, pursuant to the requirements in Section 15.214.

Marketers of cordless telephones are advised that marketing of these devices in the United States, and importation for the purpose of marketing, prior to the issuance of the required grant of equipment authorization is prohibited, pursuant to Section 2.803 of the marketing rules and Section 2.1204 of the importation rules. Cordless telephones are

subject to both Part 15 certification requirements and Part 68 registration requirements. Therefore, both a Grant of Equipment Authorization (FCC Form 731A) and Grant of Registration (FCC Form 484) must be issued by the Commission, before a cordless telephone may be legally marketed and imported. Willful violation of the Commission's marketing and importation rules may subject the violator to the forfeitures specified in Section 503 (b)(2)(C) of the Communications Act of 1934, as amended.

The rules adopted in the REPORT and ORDER was listed in the October 1, 1991 editions of 47 CFR Parts 0 to 19 and Parts 40 to 69, which are expected to be released by the U.S. Government Printing Office in February or March 1992. Accordingly, Appendix B of the REPORT and Order is included in this public notice. Please note that the last sentence in paragraph (a) of Section 15.214 is in error, and will be corrected at a later date.

Questions concerning Part 15 requirements applicable to cordless telephones may be directed to: Federal Communications Commission, Equipment Authorization Branch, 7435 Oakland Mills Road, Columbia, MD 21046, telephone (301)725-1585, FAX (301)344-2050. Questions concerning Part 68 registration requirements may be directed to: Federal Communications Commission, Domestic Facilities Division, Room 6008, 2025 M Street, N.W., Washington, DC 20554, telephone (202)634-1833, FAX (202)653-8772.

Inquiry Begun on International Standards To Control ISM Radio Noise

The Commission has begun an inquiry to solicit information to assist it in shaping its position on international standards to control radio noise generated by Industrial, Scientific and Medical (ISM) equipment. It is also seeking information about the desirability and feasibility of harmonizing Part 18 of the FCC rules with the international standards for ISM equipment.

ISM equipment is equipment or appliances designed to generate and use radio frequency (RF) energy to perform some work other than telecommunications. Examples are dielectric heaters used for plastic sealing in the manufacture of commercial goods and for wood gluing; induction heaters used for welding pipes; medical diathermy and electrosurgical and equipment; industrial microwave heaters used for commercial food processing and for manufacture of fiber optic cables; domestic microwave ovens; and ultrasonic cleaning and medical diagnostic equipment.

The Commission's rules provide eleven frequency bands where ISM equipment may operate without any restriction on emissions. These are known as the ISM bands.

In 1979, the World Administrative Radio conference (WARC-79) adopted Resolution

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63 which directed the International Radio consultative committee (CCIR) to produce recommendations, in conjunction with the International Special committee on Radio Interference (CISPR), for controlling RF emissions from ISM equipment both within and outside the designated ISM bands. These recommendations could ultimately be incorporated into the international Radio Regulations and could be made mandatory through treaty agreements.

Since 1980, the CCIR and the CISPR have been working together to develop recommendations. The first major step in this process was achieved in September 1990 with the release of CISPR Publication 11 which establishes recommended limits and measurement methods for ISM equipment on frequencies outside the ISM bands.

The Commission said that although the standards in CISPR Publication 11 are not presently accepted by the CCIR, it anticipated that these standards will be considered for adoption as a CCIR recommendation in the near future and subsequently considered for incorporation in the international Radio Regulations. The Commission also anticipates that the European Community and perhaps other foreign administrations will implement these standards.

Shut Down Aeronautical Frequencies On Charlotte, Michigan Cable Television System

The FCC's Allegan Office issued a cease operations order to Triad Cable Television of Charlotte, Michigan. The order was issued as a result of an FCC inspection of the cable system for signal leakage. During the inspection the cable system was found to have numerous leaks on aeronautical frequencies in excess of the Commission's signal leakage standards.

The cumulative result of these measured leaks caused the system to exceed the Basic Signal Leakage Criteria (CLI) as set forth in Section 76.611 of the Commission's Rules. The CLI standard is designed to prevent the presence of potentially harmful interference to aeronautical communications in the frequency bands 108-137 and 225-400 MHz. Violation of the Commission's CLI standards presents a threat to public safety. Because of the safety of life concerns associated with excessive leakage from cable television systems, the Commission will continue to inspect and enforce its regulations in this area.

Rules For The Private Land Mobile Radio Service

The Commission has amended its Private Land Mobile Radio Service (PLMRS) rules and policies with respect to construction, placing stations in operation, continuance of station operations, and license renewal and reinstatement. The Commission also adopt-

ed a finder's preference program to establish new incentives for persons to provide the FCC with information about unconstructed or non-operational private land mobile radio systems licensed on exclusive channels.

Today's action clarifies a number of licensing issues and enhances implementation of the Commission's licensing processes. The finder's preference program will encourage spectrum efficiency by identifying unused channels and reassigning them to persons who will use them effectively.

With respect to "finder's preference," the program will give prospective licensees the incentive to devote time and resources to identifying licensees in violation of the FCC's rules, thereby assisting the Commission in its compliance efforts. Persons who provide the Commission with information leading to the recovery of a channel will be awarded a dispositive "preference" toward acquiring that channel through the application process. The finder's preference program will apply to the exclusive channels in the 220-222 MHz, 470-512 MHz, and 800/900 MHz bands including Specialized Mobile Radio-Category channels.

The Commission clarified its rules concerning station construction and operation. Currently, FCC rules require private land mobile radio licensees to construct and place their stations in operation within specific time periods. Construction of a base station without placing in operation associated mobile units does not meet the requirements of these rules. The rules also require that a licensee construct a base station that is operational on all of the channels assigned. Construction of the base station must be in accordance with the parameters specified in the station authorization. The Commission stated that any and all channels not so "constructed" will be recovered from the licensee.

The Commission also clarified certain aspects of its existing placed-in-operation requirements for both conventional and trunked systems. First, licensees of both trunked and conventional stations may rely upon their own mobiles to satisfy the placed-in-operation requirement. Licensees of conventional stations must have at least one mobile transmitting with its associated base station, and trunked systems must have at least two mobile units transmitting (either two mobiles or a mobile and a control station).

Additionally, a license will cancel automatically upon one year or more of discontinued operations. Currently, a station that has discontinued operations for one year or more is deemed to have permanently discontinued operations, and the rules require the licensee to forward its license to the Commission for cancellation. The Commission's Order clarifies that while the forwarding of the license is still required, the license cancels automatically upon such a period of discontinued operations. These clarifications, the Commission said, will result in more efficient licensing procedures and a more rapid reassignment of unconstructed or non-operational frequencies.

Finally, the Commission reduced the time periods for acceptance of late-filed renewal and reinstatement applications from 180 days to 30 days after the date of license expiration. The Commission believes that the 30-day period for reinstatement and late-filed renewal applications offers sufficient opportunity for all licensees to take appropriate action to renew their licenses. The Commission confirmed that a new frequency coordination is not required for requests for reinstatement and late-filed renewals filed within 30 days of license expiration, but is required when an applicant seeks new or modified facilities. Also, licensees filing on a timely basis for reinstatement and renewal may use either FCC Form 405-A or Form 574-R.

Decline To Change Definition Of Congested Areas For Broadcast Auxiliary And Cable Television Relay Services

The Commission declined to adopt a proposal by the Society of Broadcast Engineers to require broadcast auxiliary and cable relay microwave stations located within Metropolitan Statistical Areas (MSAs), to employ high-performance Category A antenna systems that are more effective at reducing interference.

The SBE had suggested that areas of dense population, such as MSAs, would be most likely to have many television broadcast stations and cable systems which would require extensive microwave distribution. SBE had proposed designating congested areas for broadcast auxiliary and cable relay microwave services based upon Department of Commerce MSAs.

The Commission said that although the MSA approach initially showed some promise as a potentially simple way to predict microwave auxiliary service congestion, the record indicated that it would produce incorrect and inconsistent results and lead to unnecessary costs. The Commission therefore concluded that each metropolitan area possesses unique characteristics and that each microwave path within it must be analyzed with respect to its impact on congestion and preclusion of new service.

The Commission stated that current procedures appeared to be sufficient in identifying and resolving congestion problems and will permit the FCC to notify licensees when circumstances require upgrade to a Category A antenna. The Commission therefore concluded that its current rules, which require continuing cooperation among local microwave station licensees, are sufficient. The action taken by the Commission extended the deadline for auxiliary service antenna upgrades from October 1, '91, to April 1, '92.

Equipment Authorization Process For Shipboard Satellite Equipment Simplified

The Commission has amended its rules to allow increased types of ship earth station equipment to be used in the INMARSAT space segment.

The Commission's Maritime Service Rules provide that manufacturers of ship earth station equipment intended for use with the INMARSAT system of communications satellites (the INMARSAT space segment) must comply with the Commission's verification procedure. Currently, however, manufacturers are limited to the production of INMARSAT Standard-A ship earth stations because the rules specify that all ship earth station equipment must be verified in accordance with the INMARSAT document titled, "Type Approval Procedures for an INMARSAT Standard-A Ship Earth Station Model" (INMARSAT-A).

Because of the specificity of the current rules in referencing INMARSAT technical documents written for one type of ship earth station, no other models of ship earth station equipment can be authorized for ship station use.

Therefore, the Commission has expanded its rules to permit the use of all ship earth

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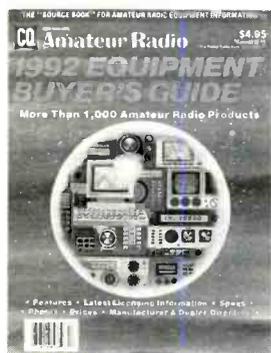
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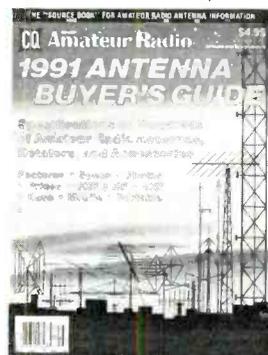
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station equipment provided such equipment meets specifications set by INMARSAT and is type approved by INMARSAT.

This change was in response to a request by Koden International, Inc. The Commission received no comments opposing Koden's petition for rulemaking and noted that because this amendment merely simplifies the equipment authorization process for shipboard satellite equipment manufacturers and COMSAT fully supports this change, there was no need for a full rulemaking procedure before its adoption.

Use Of Facsimile And Data Emissions On Maritime Public Correspondence Channels Proposed

The Commission proposed amending its Maritime Service rules to permit the use of facsimile and data emissions by all public coast stations on maritime public correspondence channels in the 156-162 MHz band.

Since 1986, an integrated system of public coast stations operating in the marine VHF public correspondence channels in the Great Lakes region has been permitted to provide facsimile and data communication services to ship stations. Individual public coast stations operating on the same channels in other parts of the United States have been limited to voice-only operations.

The proposed changes will permit the additional use of facsimile and data communications on public correspondence channels in the frequency bands 156-162 MHz by all public coast stations.

This will provide these stations and the commercial and noncommercial vessels they serve with a wider range of communications options, such as facsimile, teleprinter and data communications.

Use Of Synthesized Voice For Distress Communication On VHF Marine Channel 16 Proposed

The Commission proposed amending its rules to authorize and provide standards for the use of synthesized voice messages in VHF marine channel 16 to send distress transmissions.

This change would permit marine electronics equipment manufacturers to incorporate synthesized voice as an integral part of a VHF transmitter or as ancillary equipment to existing VHF marine transmitters.

Although the petitioner for this change, Robert Tendler, asked that the change be made by a declaratory ruling and not a full rulemaking proceeding, the Commission said that the use of synthesized voice merited a careful review and examination of the issues

raised during a full rulemaking procedure.

The Commission noted that it took this position in the interest of preserving a primary purpose of Part 80 of the rules—to provide for the safety of life and property at sea. Because safety is of such paramount concern, the Commission said it tried to ensure that radio transmitters licensed under Part 80 operate effectively for the maritime community and national and international search and rescue teams. It said it has found caution to be especially important when dealing with new systems.

The Commission proposed, and asked for comment on, permitting the optional use of synthesized voice on VHF marine channel 16 and permitting the use of external add-on devices to generate the synthesized voice message. It specified that the use of synthesized voice cannot exceed the existing technical standards such as emission and bandwidth limitations for ship VHF transmitters and proposed to limit the number of repetitions, length and content of a synthesized voice message.

Exemption For Maritime Service Hand-held Receivers From Automatic Timing Device Requirements

The Commission denied a petition by Bradford D. Carey asking for the elimination of the exemption for portable, hand-held transceivers from the requirement that VHF ship station transceivers be equipped with an automatic timing device that deactivates the transmitter after an uninterrupted transmission period of five minutes.

This exemption was included in the 1991 amendment of the Maritime Service rules (Part 80) which required that VHF ship station transmitters automatically cease operation after a predetermined period of operation.

Carey contended that the exception for hand-held units should be deleted because some hand-held transceivers can be operated from an external power supply and connected to the ship's antenna. Thus, he argued, such transmitters would be capable of causing interference if the carrier was stuck, i.e., a prolonged continuous signal radiated by the inadvertent operation of a marine VHF transmitter.

The Commission disagreed, noting that it had exempted portable, hand-held transmitters because such radios posed no significant interference problem. It further pointed out that the Report and Order adopting the rules used the specific language—"hand-held transmitters"—to differentiate between such portable transmitters and ship station transmitters intended for fixed installation. Because of the possibility of confusion over this terminology, however, the Commission said it would clarify the rules to make this difference clearer.

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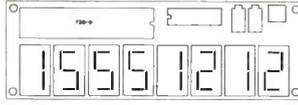
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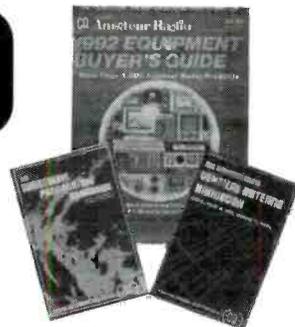
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27 MHz COMMUNICATIONS ACTIVITIES

We thought this might be an opportune time to satisfy many continuing reader inquiries by showing and discussing some of the things people keep asking about.

Starting off, let's explain that the letters SSB are the initials for Single Sideband, which (for our purposes here, at least) is a somewhat different mode of operation on 27 MHz than "regular" CB, which is usually termed AM. Actually, SSB is merely a sophisticated variation of AM, except that the differences are sufficiently large for AM and SSB stations to be unable to communicate with one another.

Special transceivers which can be used for either SSB or AM operation are used by SSB operators, and SSB operations generally populate the higher channels (for instance, Channel 36 and above, in many areas), and use only the LSB mode. There are local exceptions, of course.

Transceivers capable of SSB operation cost somewhat more than AM-only CB transceivers. They also allow communications between local stations far more widely separated than stations using AM. Several SSB stations can transmit simultaneously on the same channel without causing chaos, such as the whistles and annoying tones noted when the same thing happens with AM.

Operators employing SSB don't use CB lingo, 10-codes, or do they make any other efforts to sound like Hollywood's version of either truckers or people from the rural backwoods. SSB operators speak in regular English, like you and I. Also, SSB operators don't ever use CB "handles" to identify their transmissions. Instead, they use numbers assigned by organizations.

SSB operation is a lot of fun, in addition to being a much more efficient way of reaching out to other stations. For more information, and to find out how to obtain your own station ID number from the world's oldest (1964) sidebanding organization, send a self-addressed, stamped (US 29 cents), return envelope to The SSB Network, P.O. Box 908-X, Smithtown, NY 11787.

A good looking SSB/AM rig is Radio Shack's Realistic TRC-465. This unit has a switchable automatic noise limiter, an RF gain control, a 5-step LED meter, small size, and a price tag around \$200.

Dances With Indians

In CB-land, TV interference (TVI) is sometimes called *Tennessee Valley Indians*. What with many TV sets on the cable now, TVI from CB stations isn't as common a problem as it once was. Still, everybody isn't hooked to the cable, and in weak signal TV areas, sometimes those Indians ride with every press of a CB mike button.



The Realistic TRC-465 is a fine combo SSB/AM transceiver.



Trouble with TVI? Try the MFJ-704 low pass filter.

To be sure, CB rigs aren't supposed to be generating spurious signals and harmonics. Sometimes they do, anyway, especially as they age, or if they aren't running barefoot.

Whatever the cause, the best starting out point for ending the problem is by inserting a low-pass filter in the CB rig's antenna feedline. It's a reasonably inexpensive approach.

The MFJ-704 filter will pass all signals below 30 MHz, but not allow any signals above 40 MHz to get through. The TV channels begin on 54 MHz, so that cuts you 14 MHz worth of slack, just in case your rig is tossing out any extra unwanted signals on TV channels. The filter is only \$39.95, and it will stand up to a full 1.5 kW so it is suited to ham use, too.

For more information, or to order, contact MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762.

Turned On & Tuned In

For tuning up your CB rig with an SWR/power meter, a dummy load is very handy. It's also useful for checking coaxial cable power measurements, as well. An old CB trick is to use dummy loads instead of external antennas in several vehicles traveling together. This permits close-in communications and completely cuts out chatter from other stations on the channel, unless they happen to drive up within a half-mile of your caravan.

Radio Shack's Archer 21-506 dummy load will wrangle a continuous 15-watt signal, and even handle 100 watts for 30 seconds (with a 3 minute cool-off period before it gets hit with another 100 watt jolt).

Matchmaker

One of the most frequently heard complaints is that there's a mismatch between the CB rig and the antenna system, as denoted by the readings presented by an SWR meter. The greater the mismatch, the more the amount of wasted signal that never gets the opportunity to radiate from the antenna. When dealing with the small power ratings involved in CB communications, even a small loss can mean the difference between contact and no-contact. The trick is to knock that high SWR reading down to as close as you can get to a virtually perfect 1.1:1 SWR.

Taking apart the antenna, then putting it back together again and re-peaking it is a possible approach that may (or may not) solve the problem, even after all of the work. The quickest and most effective way we know is by using an antenna matcher.

There are all types and sizes of matchers, but for CB use you don't need to spend a lot. You put the matcher in the coaxial cable and then adjust its two knobs as your SWR drops like a rock and your station's output and efficiency simultaneously increases. A low SWR also reduces chances of TVI, as it extends the life of your rig's transmitter finals.

A nifty little matcher we have used handles up to 250 watts on all frequencies between 13 and 78 MHz. It can be used for AM, SSB, CW, or FM signals. The *Matcher* is available from CRB Research, P.O. Box 56, Commack, NY 11725, for \$20.95, plus \$3.50 for UPS shipping to addresses in the USA and Canada (sent First Class Mail to AK, HI, PR, VI, APO, and FPO addresses). Residents of NY State, please add \$1.96 sales tax.

Old Timers Day

The information we have been presenting about old CB rigs has attracted a considerable amount of favorable mail, including some questions.

Wes Jacobs, of Arizona, asked what rig we thought was the most high tech of those in the early days. Also, on the flip side, if we thought any particular rig was particularly junky.

In late 1964, a company called Specifics Incorporated, of Southbridge, MA announced a Model CS-100 rig that contained a built-in spectrum analyzer with a 5-inch screen. The unit was priced at \$400, but we don't know if any sets were actually built and sold, although it was advertised. This was the

most advanced set from the 1960's CB era. Anybody have better info?

As for the most trashy set, there wasn't one in particular. There were always a parade of unattractive, low-priced, rigs with no particular features to recommend them to any persons other than those who didn't know any better. One from the 1960's that quickly comes to mind as being typical is the Metrostar, made by Metrotek Electronics, Inc., of North Carolina. The Metrostar wasn't awful, but neither was it very good, either.

It had an eight channel transmitter, while the receiver was tunable and also crystal controlled. It was big, funny looking, and had a single conversion receiver. With almost no effort at all, the cover on the panel meter could be knocked off. After the first time that happened, it would continue to fall off, almost at will. One thing to be said about the Metrotek, however, was that the company did offer a plug-in selective calling accessory that was pretty fair.

Bye Bye BEAR

The good idea was that when driving on busy I-96 between Grand Rapids and Detroit, MI there was Project BEAR, Broad Emergency Assistance Radio. BEAR was established thirteen years ago to monitor CB Channel 9 by the Michigan State Police and the Department of Transportation. Since 1981, its ten base stations have been staffed by monitors who have all been volunteers.

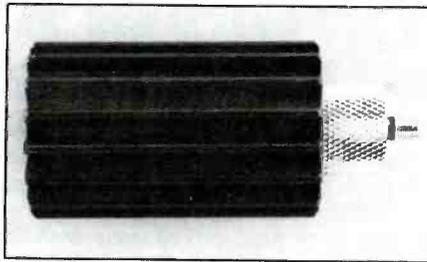
Unfortunately, Project BEAR is now history. The plug was pulled last September. Reasons cited were difficulties in recruiting volunteers, lack of interest by motorists, old CB equipment at the monitoring stations, and interference from skip stations on Channel 9. The police came to feel that many motorists now have cellars that can be used to summon help, and those who rely on CB radios can probably contact a long-haul trucker since they are thought to be the eyes and ears of the highways.

Speaking from the point of view of an active CB operator who has clocked many miles on North American roads, I'd say it's sad to see a program like Project BEAR fold up. We appreciate John Nyndman, of DX Radio and Electronics, in Lansing, MI for telling us about the demise of Project BEAR.

The Value Of CB While On The Road

Lynda Myers, who is 40 years old, and lives in Connecticut, has muscular dystrophy. The illness has made her unable to walk, restricting her to a wheelchair.

A few months ago, she swerved her van to avoid a eighteen-wheeler. That caused her van to strike a guardrail and tumble down a steep incline into a ravine. This was at 2 a.m., and she spent the next several hours in shock. When she was able to gather her wits, she was cold, bruised, trapped, and realized that she would never be seen in the spot where her van had tumbled.



Archer's 21-506 antenna dummy load has several handy uses for CB operators.



Metrotek's Metrostar was typical of some of the undistinguished CB gear that began arriving in the early 1960's.

After twelve hours at the bottom of the ravine, she pulled the wires out of her broken cellular phone. Hooking them to the battery of her electric wheelchair, she was able to run power to her CB rig and call for help. A passing trucker heard her call, and that brought about efforts to rescue her.

Bruised, and in a hospital, here's one motorist who knows the value of having a CB rig at hand when nothing else would do. Thanks to Brian Blight, Flint, MI, also Bill Tuttle, of Stratford, CT for passing this along.

Travel Tips With CB

What with winter weather at its peak, it's good to keep in mind that should you ever need to use your CB radio to summon help for yourself or others, there are a couple of things to remember that makes everything happen a lot faster and better for you.

REACT reminds us that unless you follow some basic and simple procedures, your chances of being helped could be substantially reduced. For starters, expect that you may have to repeat your call for assistance over and over. Your call for help should include all vital information. One time may not do the trick. After each broadcast, pause to listen for a reply. If someone answers you and says help is on the way, you're set. Otherwise, keep repeating your call for help. Try Channel 9. If that doesn't bring a response, try Channel 19 next. Or try any channel you can hear stations talking.

In any event, don't panic, don't give up. Keep repeating your call for help, including all of the same vital information, and in the same order.

Vital information means: Your ID; exact location (road name or number, mile post, direction, even the name of the city/state/province); injuries (describe); problem and what help you seek.

To become a member of a REACT Channel 9 monitoring team, contact REACT, P.O. Box 998, Wichita, KS 67201. For a copy of REACT's safety leaflet, *Getting Help by CB Radio*, send an SASE and a \$2 donation to REACT as the address given.

March With Us

We hope you will be back on channel with us in March. Let us hear from you. We seek your questions, shack photos, newspaper clippings, opinions, CB QSL's, and what-have-you. ■

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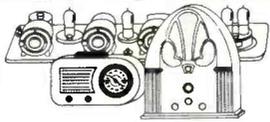
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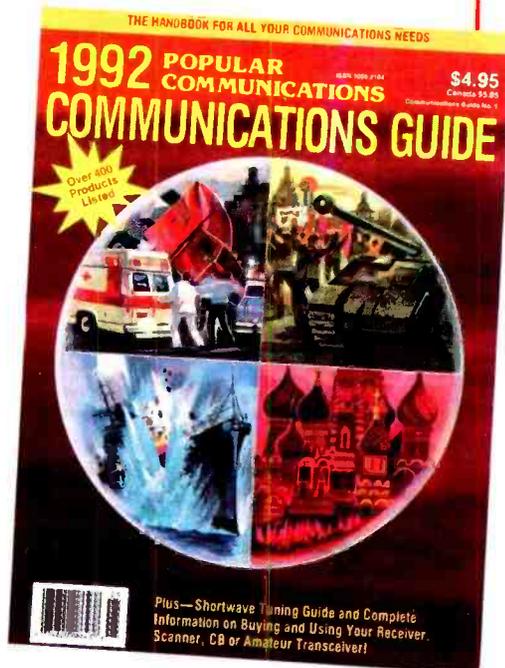
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Beaming In

(from page 4)

the rear seat has so little leg room that adults usually pass up invitations to sit there. I have never had any occasion to even try the button that controls loudness, nor have I yet realized the benefits of Automatic Dynamic Noise Reduction (whatever that is). It's got an outboard on/off and slide switch arrangement marked "gain." Although it's not described in any of the car's literature, mostly what it seems to do is activate some hideous bass reverb system that lets people two blocks away think that there's an earthquake. And when I learned that even repeated pressing of the button marked "CRO2" (Chromium Dioxide) failed to offer medicine to relieve a headache during a traffic jam, it also quickly fell into disuse.

Setting up stations on the four push-buttons is no longer as simple as tuning in a station you like, then pulling out a push-button and pushing it in again. Now you must press a separate "Set" button, then press the push-button you want. Something that once took one button and didn't require taking your eyes off the road, now calls for two buttons and can't be safely or easily accomplished while driving.

Going across the AM or FM band is no longer a simple matter of reaching over for that familiar tuning knob. Now, you've got to locate, from the mass of little doodads, any of no less than four buttons that are in charge of such things. One button causes the receiver to tune upwards in frequency when you hold it in. Another button makes it tune lower in frequency. Another button makes the receiver automatically scan up the dial, stopping for a few seconds on each station and then moving on. The fourth button makes the receiver seek out stations and remain stopped on each one.

Picking out one specific button from the others while also trying to safely control the vehicle in traffic is a challenge during daylight hours. At night, it's quite harrowing, especially since the buttons are small and placed so closely together.

This radio wasn't even the top of the line car radio Pontiac was offering in the car's model year. The technology for these things has gone forward in the ensuing years.

I have recently been car shopping again. Loads of glitzy vehicles to dazzle and delight the eyes, with plenty of horses, variable suspension, much plastic, fiberglas, metallic colors, vent holes, and computerized voices that don't stop babbling their incessant warnings about everything from poorly closed doors to low tire pressure. The new AM/FM car radios look every bit as formidable as desktop HF transceivers costing \$4,000 and up. Dolby sound, crossover networks, detachable function boards, jumbo LED displays, thirty station memories, 100 watts of audio per channel, a laser light display, plus the *Rockettes* and the floor show from *The*

Sands Hotel in Las Vegas comes with these sets. Here we go again.

Do you think they'll sell me one of these new Detroit concoctions specially equipped? If so, I'll take that sleek yellow job with the low profile tires, anti-lock brakes, air bag, and the turbocharger. But, maybe they can dig around in the back of the warehouse for one of those dinky radios offering nothing more than the two bulky control knobs—and, OK, a digital display. Maybe a few push-buttons, too. And a tape deck—with auto-reverse, and... Oh, what the heck, I know damn well I'm going to end up getting one of those new high-tech Philips AM/FM/cassette stereo car radios that also picks up from 3170 to 21910 kHz shortwave.

But I'll always have memories of what I might have had in the new car if it weren't for the fact that they keep developing all of these seductive new radios to snag me. ■



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Optional Accessory
• PG-2N Extra DC cable

R-2000

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Optional Accessories R-2000:

- VC-10 VHF converter
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- VC-20 VHF converter
- VS-1 Voice module
- DCK-2 for 12 volt DC operation
- YK-88A-1 AM filter
- YK-88SN SSB filter
- YK-88C CW filter
- MB-430 Mounting bracket.

Other Accessories:

- SP-430 External speaker
- SP-41 Compact mobile speaker
- SP-50B Mobile speaker
- HS-5 Deluxe headphones
- HS-6 Lightweight headphones

KENWOOD U.S.A. CORPORATION
COMMUNICATIONS & TEST EQUIPMENT GROUP
P.O. BOX 22745, 2201 E. Dominguez Street
Long Beach, CA 90801-5745
KENWOOD ELECTRONICS CANADA INC.
P.O. BOX 1075, 959 Gana Court
Mississauga, Ontario, Canada L4T 4C2

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