

POPULAR COMMUNICATIONS

SEPTEMBER 1989 \$2.50
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Incorporating SCAN Magazine The Official Publication of the Scanner Association of North America

Eavesdropping On Real Wargames!

Also in this issue:

- Iran's Shortwave War of Words
- POP'COMM Reviews: Realistic's PRO-2005 Scanner
- Shortwave Monitoring In The USSR



Plus: CB, Ham, Scanners, Satellites, Car Phones, Nostalgia, Pirates, And More!



World's Most Powerful CB and Amateur Mobile Antenna*

Lockheed Corp. Test Shows **Wilson 1000** CB Antenna Has **58% More Gain Than The K40 Antenna (on channel 40).**

In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

Guaranteed To Transmit and Receive Farther Than Other Mobile CB Antenna or Your Money Back**
New Design

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

Why Wilson 1000 Performs Better

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

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

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

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 1500 watts of power.

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 17-7 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

Lockheed - California Company
Plant #1 Bldg. 250 Dept. 74-16
A Division of Lockheed Corporation
Burlingame, California 94020
Aug. 21, 1987

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

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

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

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.945	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

58% MORE POWER GAIN THAN THE K40

A complete description of this test is contained in file #870529. Excerpts of this report are enclosed.

Approved: *W. C. Weikel*
W. C. Weikel, Group Engineer
Antenna/ATS Support Laboratory

Lockheed - California Company
Electromagnetics Laboratory

INTERNAL VIEW
Wilson 1000

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Floating Coil Eliminates 95% Dielectric loss (Pat. Pend)

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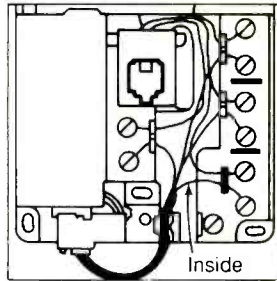
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SCAN Magazine

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The World Below 500 Kilohertz

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MULTI-MODE CONVERTERS

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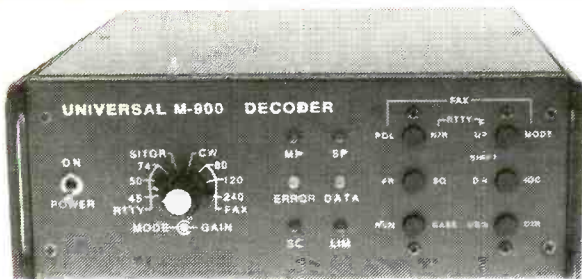


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- ◆ Regular Baudot RTTY
- ◆ Sitor Mode A (ARQ)
- ◆ Sitor Mode B (FEC)
- ◆ Facsimile (FAX) FM
- ◆ Variable & Standard Shift

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. Full system prices are available.

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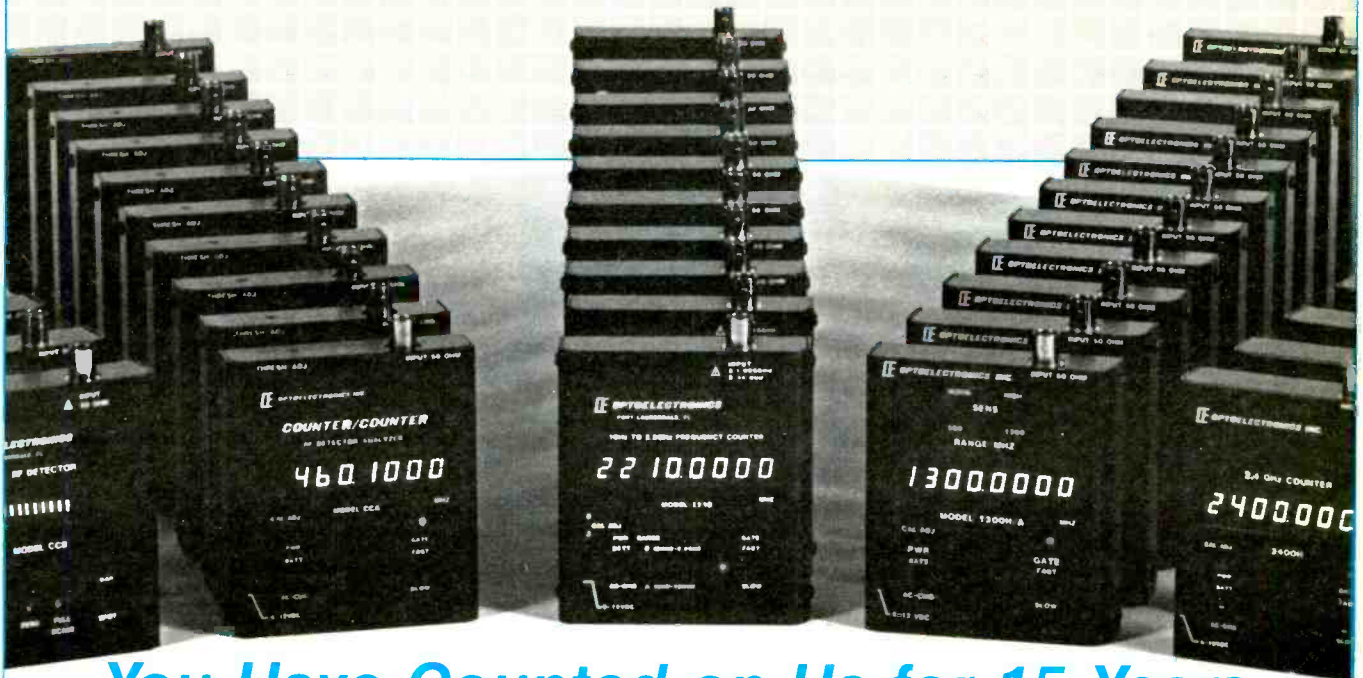
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100 MHz	< 3 mv	< 1 mv	< 3 mv	< .5 mv	< 5 mv
450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
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AN EDITORIAL

Television's Phony Fiftieth

All the hype and ballyhoo this past year about 1989 being the 50th birthday of television, or the start of commercial TV broadcasting, is to laugh. Using 1939 as the starting date is as blatant a reworking of history as we've seen in a long time.

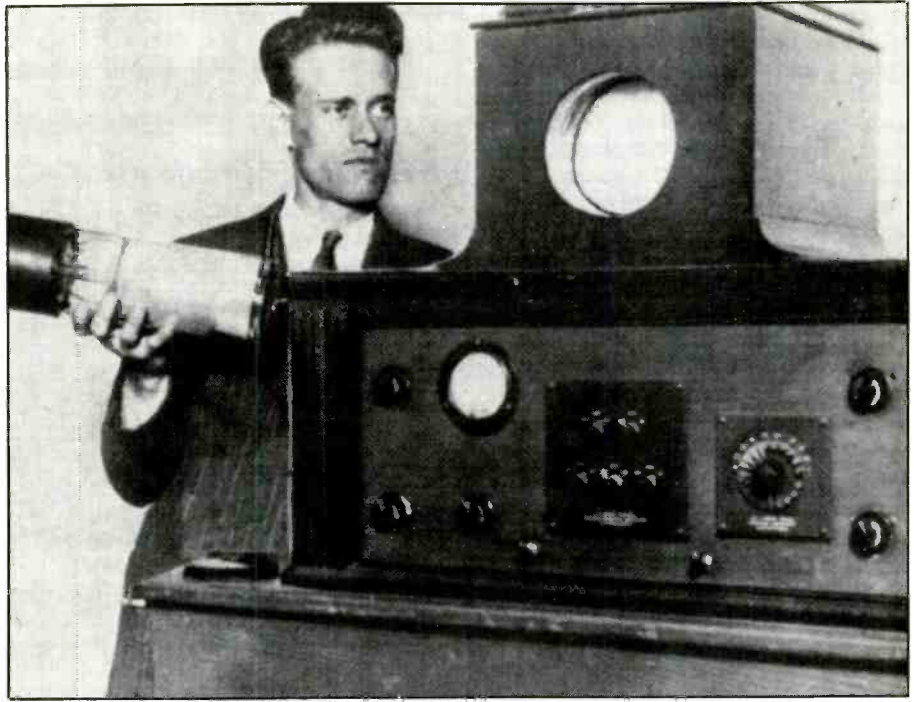
The beginnings of television date to 1884 and Nipkow's mechanical scanning disc; a system improved upon in the 1920's with the addition of work by John Fleming, Heinrich Hertz, Thomas Edison, Lee de Forest, Charles Jenkins, and John Logie Baird. In 1923, Vladimir Zworykin had already taken out some patents on an electronic camera tube intended to be a component in an all-electronic (no moving mechanical parts) system which both RCA and GE were furiously racing against one another to perfect.

In 1922, a sixteen year old Utah high-school student and electronics tinkerer, Philo Farnsworth, hit upon the idea needed to make all-electronic television into a practical, and working reality. In 1928, he obtained a patent on his system, thus beating both RCA and GE to the punch.

GE had already scheduled scanning disc telecasts from its Schenectady experimental station in 1928. In 1931, the CBS station in New York City began regular scanning disc telecasts that lasted for a year and a half. RCA's NBC station in New York City started operating in 1930 with scanning disc transmissions, but there wasn't a regular program schedule.

Zworykin built an all electronic TV receiver using a kinescope picture tube in 1929 and was convinced that it was a far better system than any that needed a mechanical scanning disc. Zworykin's boss, RCA's Gen. David Sarnoff, suggested to Zworykin that he speak to Farnsworth and find out more about his technique. RCA owned all of the major radio patents; the thought may have crossed Sarnoff's mind that Farnsworth's patent would be an asset. Farnsworth spoke to Zworykin, who must have gone back to Sarnoff with a glowing report. Sarnoff offered Farnsworth \$200,000 to buy him out. Farnsworth wasn't interested in selling, but said he'd be willing to give RCA a non-exclusive patent license.

RCA was one of the world's largest electronics firms. They granted patent licenses to others, they didn't pay royalties to use someone else's patent. Sarnoff bristled at the gall of a twenty-two year old nobody turning down an offer that any other inventor wouldn't have been able to refuse.



Philo Farnsworth, in 1929, displays his invention. To observe 1989 as TV's 50th birthday is to rob Farnsworth of his rightful place in history.

No more Mr. Nice Guy! Sarnoff then brought suit against Farnsworth on the grounds that he had infringed upon and interfered with some of RCA's existing patents. The suit dragged on until 1936 and effectively served to sideline Farnsworth from commercially exploiting his system and granting patent licenses.

Farnsworth won the suit, then won the appeal. Sarnoff's lawyers continued to toss minor legal barriers in front of Farnsworth for another couple of years but, by 1939, RCA had nevertheless become one of Farnsworth's non-exclusive patent licensees.

On April 30th, 1939, the RCA/NBC experimental TV station in New York started a regular program schedule in Farnsworth's all-electronic system. This was just in time for the opening of the 1939 New York World's Fair, where you could go to the RCA exhibit and and be an eyewitness to the fact that TV had finally arrived. A dazzling array of fifteen RCA TV sets were on display as proof. Under the circumstances, it may have not been too difficult for the public to come to the conclusion that, by the grace of RCA, this was the birth of television. There weren't any large signs up stating the contrary.

In 1941, the NBC and CBS experimental

stations in New York were the first to receive commercial licenses. Therefore, pegging the "50th birthday" of TV, or of commercial TV broadcasting, to the events of 1939 is sheer hoakum. It's far less the anniversary of TV than it is a practical demonstration of manipulating history to perpetuate a commercial myth. It is a confirmation of how deftly Philo Farnsworth has been aced out of the recognition he deserves.

Although I was but six at the time, I clearly remember the several trips my family made to the 1939 Worlds Fair, and how amazed I was at seeing television. The flickering blueish images had to be watched by peering into a reflecting mirror in the lift-up lid of the console set. Although the sets on display could be purchased, not too many were actually sold. It was enough of a miracle just to see them in operation, know that they were available for purchase, and realize that telecasts were actually going out, all courtesy of RCA! It was a sensation; everybody was talking about the exhibit.

We got our first TV set exactly 43 years ago this month, in September of 1946. Ours was one of the earliest postwar sets, and one of the first few hundred TV sets in New York

(Continued on page 72)

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.

Come To The Pow Wow: Bring Your Rig

The Little Big Horn Amateur Radio Organization is a group of Native American Indian hams, and operators of other ethnic backgrounds in Native Americans, who are banding together to build bridges of understanding, friendship, and respect between all Native Americans and others via Amateur Radio. Membership is open to all operators who wish to join. We operate two weekly slow speed CW nets on Saturdays for the purpose of exchanging news of interest. These nets are on 14057 kHz at 2200 UTC, and 21150 kHz at 2230 UTC. Sometimes, the net "administrators" chat on 21352 kHz USB at 2130 UTC just prior to the regular CW net. Feel free to join in, and we also welcome SWL reports. Please mention Native American affiliation (if any).

Awards are still in the future; our public relations members (W6FEG and WD8PTN) are presently working on an award system. For the present, please check in with us and enjoy the net. Your first net check-in will bring you a nice picture QSL.

Lynn Wilke, WA2DAC, Net Manager,
Little Big Horn ARO,
P.O. Box 446,
Peru, NY 12972

This is a fine idea. Hopefully, a 10 meter SSB check-in program will eventually be established near 28400 kHz as it will undoubtedly attract many new net members—Editor.

Dah-Dah-Dah-Dit

Having been a professional radiotelegrapher for 44 years, I find popular Communications interesting and informative. The story in the June issue (about Merchant Marine Officer vs. "State Of The Art" by Richard E. Dixon) especially caught my eye. His chart showing coastal stations, however, should have included our station, WPD/Tampa Radio. While several marine coastal stations have closed recently, ours is not one of them. This omission could lead to confusion as to our existence and I'd like to request that you provide this information. For your guidance, WPD's CW frequencies

are: 4274.0, 6365.5, 8615.5, 13051.5, 17169.5, and (of course) in the M/F bands on 420 and 500 kHz. We are also active in the 4, 6, 8, 13, and 17 MHz SITOR bands on frequencies shown in ITU manuals.

Don Berger, Manager,
WPD/Tampa Radio,
84230 W. Alva Street,
Tampa, FL 33614

Best Things In Life Are Free

I recently modified my Realistic PRO-2004 scanner as follows:

1. Installed a 1N914 diode in "510" to get 100 additional memory channels.
2. Installed a 1N914 diode in "514" to increase the scan rate from 8/16 channels-per-second to 10/20 channels-per-second.
3. Removed the diode from "513" to restore deleted 800 MHz band frequency coverage.

These diodes are all on a PC board beneath the chassis of the unit in a metal box. After the scanner has been unplugged from its power source, remove it from its cabinet and take the lid off the metal box. You'll see a row of diodes along with some large IC's. The holes for "510" may not be numbered so just count up from a numbered diode to find them.

There is also a trick to get the PRO-2004 to search in 30 kHz steps in the 800 MHz bands. While programming the cellular limits for search, hit the RESET key on the front panel keypad. The LCD will now display a 30 kHz step.

Anyone who can solder can make these simple modifications to significantly improve the versatility of this scanner. There is no need to purchase "modification kits" selling for astronomical prices in order to make these changes.

Jason Hillyard, KB6GFL,
San Diego, CA

For those who want to add missing frequency bands to the Realistic PRO-2021 scanner, I would like to note that on the processor board there are two chips. Near these components are several 1N914 diodes. With the scanner disconnected from its power source, you can clip the diode in the spot marked "D-45" and you'll restore coverage of 68 to 88 MHz. If you clip out the diode in the "D-44" spot, you restore 806 to 960 MHz.

E.R. Howard, KNJ2MX,
Upper Montclair, NJ

POP'COMM Is Finnished?

Along with this letter, I'm enclosing a copy of "Skanneri," the only Finnish communications hobby publication. It was inspired by POP'COMM. It's very difficult for

us to have a radio hobby publication magazine here because most of the things you listen to in the USA are illegal to monitor in Finland. It's illegal to listen to police, fire, etc., here. It's illegal to import, produce, sell, and use scanners here. You could get six months in jail. Still, where there are signals to be heard, there are hobbyists.

Anssi Nieminen,
Karpankuja 12,
40400 Jyvaskyla,
Finland

This reader would probably be thrilled to hear from American and Canadian DX'ers. He seems quite fluent in English, too. The publication he enclosed is all in the Finnish language, and is a 28-page booklet similar in format to a DX club publication. Although we can't understand Finnish, it seems to cover scanners, CB, ham radio, military comms, pirates, satellites, and SWL'ing. It's quite a good-looking publication, although we can't make out the pricing information. Those who can read Finnish might wish to get in touch with these good folks. Their address is: Skanneri, P.I. 82, Jyvaskyla, Finland—Editor

Ten, The Easy Way

I use an Avanti Moonraker 6 CB beam. This antenna offers better than 16 dB gain, with selectable horizontal or vertical polarization. With its rotor and mountings, it represents an investment of several hundred dollars. I'm not complaining because it has served me well and puts out a whale of a signal. Now, I'm working on my ham ticket and that raises a few questions. The "Rake" is so huge, that it leaves little room on my roof for another antenna. Since I'm planning on continuing 27 MHz operation even after I get my ham ticket, do you think this same antenna can be used for SSB operation in the Novice portion of the 10 meter Amateur band even though there's a 1 MHz frequency difference?

Fred Gonzalez, SSB-96D,
Homestead, FL

CB base station antennas, in general, are readily adaptable to 28 MHz ham operation. A stock Big Stick CB coaxial antenna loads up on 28.400 MHz with a 2:1 SWR, and can be brought to near-perfect match with an antenna tuner. The Moonraker series of beams are excellent 10 meter antennas, and the ability to quickly switch between vertical and horizontal polarization is an asset when working DX on this band. You may have to retune it slightly for best performance on both the 27 and 28 MHz bands, since its presently peaked for 27 MHz operation. There are many CB antennas presently in use on the 10 meter band and yours is certainly one of the best for the purpose—Editor.

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Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for \$12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends September 30, 1989.

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Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 - Dept. UN16, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires September 30, 1989. Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add \$11.00 for shipping in the continental U.S.A.

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Regency RH256B-T \$294.95
Bearcat 200XLT-T \$249.95
Bearcat 100XLT-T \$184.95
Bearcat 800XLT-T \$249.95
Uniden HR2510-T \$229.95
Uniden PRO500D-T1 \$32.95

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12-Band, 100 Channel • Crystalline • AC/DC
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 Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
 The Bearcat 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz band. The Bearcat 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1-1/2" H x 7-3/4" D. Model BC590XLT-T is a similar version without the 800 MHz band for only \$194.95. Order your scanner from CEI today.

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 The Regency RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the **RH606B-T** is available for \$429.95. A UHF 15 watt, 16 channel version of this radio called the **RU156B-T** is also available and covers 450-482 MHz. but the cost is \$454.95.

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 PRO510XL-T Uniden 40 channel CB Mobile \$38.95
 PRO520XL-T Uniden 40 channel CB Mobile \$56.95
 PRO530XL-T Uniden 40 channel CB Mobile \$79.95
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Bearcat® 200XLT-T
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12-Band, 200 Channel • 800 MHz. Handheld
Search • Limit • Hold • Priority • Lockout
 Frequency range: 29-54, 118-174, 406-512, 806-956 MHz.
 Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
 The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the BC 100XLT-T for only \$189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adaptor and earphone. Order your scanner now.

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 List price \$549.95/CE price \$259.95/SPECIAL
12-Band, 40 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
 Bands: 29-54, 118-174, 406-512, 806-912 MHz.
 The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 1 1/2". If you do not need the 800 MHz. band, a similar model called the BC 210XLT-T is available for \$178.95.

Bearcat® 145XLT-T
 List price \$189.95/CE price \$94.95/SPECIAL
10-Band, 16 Channel • No-crystal scanner
Priority control • Weather search • AC/DC
 Bands: 29-54, 136-174, 406-512 MHz.
 The Bearcat 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the BC560XLT-T featuring priority, weather search, channel lockout and more is available for \$94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

President® HR2510-T
 List price \$499.95/CE price \$239.95/SPECIAL
10 Meter Mobile Transceiver • Digital VFO
Full Band Coverage • All-Mode Operation
Backlit liquid crystal display • Auto Squelch
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 The President HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/RF/MOD/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

NEW! President® HR2600-T
 List price \$599.95/CE price \$299.95/SPECIAL
10 Meter Mobile Transceiver • New Features
 Delivery for this new product is scheduled for June, 1989.
 The new President HR2600 Mobile 10 Meter Transceiver is similar to the Uniden HR2510 but now has repeater offsets (100 KHz.) and CTCSS encode.



BC760XLT
 800 MHz.
 mobile scanner
SPECIAL!

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★ ★ ★ Extended Service Contract ★ ★ ★

If you purchase a scanner, CB, radar detector or cordless phone from any store in the U.S. or Canada within the last 30 days, you can get up to three years of extended service contract from Warrantech. This service extension plan begins after the manufacturer's warranty expires. Warrantech will perform all necessary labor and will not charge for return shipping. Extended service contracts are not refundable and apply only to the original purchaser. A two year extended contract on a mobile or base scanner is \$29.99 and three years is \$39.99. For handheld scanners, 2 years is \$59.99 and 3 years is \$79.99. For radar detectors, two years is \$29.99. For CB radios, 2 years is \$39.99. For cordless phones, 3 years is \$34.99. Order your extended service contract today.

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 TS2-T Regency 75 channel scanner \$269.95
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The War Of The Words

A Chorus Of Anti-Iranian Shortwave Voices All Dedicated To Running Or Overthrowing The Government

BY GERRY L. DEXTER

Last March a broadcaster identifying as "Radio Tehran, the Voice of the Islamic Republic of Iran" aired a broadcast on 9021.1 from 0930 to 1015 UTC and announced another at 2030. The English language program consisted of readings from *Satanic Verses*, the Salman Rusdie book which has caused such an uproar around the world. The station announced its address as P.O. Box 333, Tehran. There were several things wrong with this picture. For one thing, VOIRI programming would hardly include readings from the Rusdie book. For another, there are four "3s" in VOIRI's address and the broadcast was slightly off 9022—a frequency VOIRI has used for decades. The station proved to be a false image on the clandestine radar screen. "Radio Tehran" turned out to be a low power hobby pirate operating from Holland, according to the Radio Netherlands Media Network program.

"Radio Tehran" may have been someone's idea of a joke but it's about the only radio station connected with Iran that isn't deadly serious. Iran is the target of more anti-government broadcasts than perhaps any country since World War II. In fact, clandestine radio was being aimed at Iran almost that far back.

Early in the Second World War the Soviet Union managed to create a "Democratic Republic of Azerbaijan" out of what had been an Iranian province. In 1947 Azerbaijan Democratic Radio came on the air and operated for six years, taking a strong anti-British, anti-US, anti-Iranian government line. Around 1957 the now famous Radio Peyk-e-Iran (Iran Courier) came on the air and had a two decade run as the voice of the Communist Party in exile. Originally located near Leipzig, East Germany the station moved to Bulgaria after East Germany and Iran established diplomatic relations. Still later, it moved to Iraq where it operated until 1976 when Iran and Iraq patched up some of their differences.

The National Voice of Iran came on the air in 1959, claiming to speak for all Iranian nationalists, even though it was a mouthpiece for the Tudeh (communist) Party. Its transmitters were at Baku, in the Azerbaijan SSR. Its program content paralleled the state of relations between Iran and the



IRAN LIBERATION

News bulletin of the People's Mojahedin of Iran

N 5 Wednesday, August 6, 1986

Fantasy of victory in the war

Rafsanjani: "We must move in such a way as to bring the war to a victorious end before the economic pressure takes effect."

The public demonstrated in Shiraz against forcible enlistment for the war

During recent weeks, the Khomeini regime's officials have several times spoken of a quick end to the war, without making any mention of peace.

Rafsanjani, the Speaker of Parliament, referred to the mobilization of 1,000 battalions. Mohsen Reza'i, the Commander of the Guards Corps, promised offensives "in the near future" which would "amaze and astonish the world!" And Khamene'i, the regime's President, predicted the regime's ideal—the overthrow of the Iraqi government—to be at hand.

These baseless assertions fool no one in Iran, while in international circles they are viewed as statements derived purely from desperation and helplessness. In fact, the Khomeini regime is having tremendous difficulty in maintaining a minimum force at the fronts; 1,000 battalions is a figment of the imagination.

During a recent Friday prayer ceremony in Tehran, Rafsanjani asserted: "The situation of the war has reached a stage which, according to any calculation worthy of the attention of experts, we must prepare ourselves to bring this war to a decisive point as soon as possible, even if it be one day sooner. We should no longer let time be on the side of our enemies."

Continued on Page 3

Iranian physicians' strike

450 doctors arrested in Tehran

110 medical associations, organizations and dignitaries express their deep concern at the fate of Iranian doctors by issuing declarations

The Iranian physicians' strike, protests and opposition against the dissolution of the Iranian Medical Association and the arrest, torture and suppression of doctors by the Khomeini regime are continuing, according to news and reports received from Mojahedin resistance cells.

The crack-down includes the arrest several days ago of 450 doctors in Tehran, the majority of whom were from two hospitals, Torfeh and Khomeini. All telephone conversations by the doctors, in particular their international calls, are being monitored by the Khomeini regime's Information Ministry.

Many of Tehran's doctors closed their surgeries on July 29, 30, and 31 and sent letters to the Khomeini regime's Health Minister, Marandi, strongly protesting at the dissolution of the Medical Association, the arrest of physicians and the denial of the right to strike.

Continued on Page 2

Number of high school students drops 50% in past seven years

Page 2

The Commander of Khomeini's Guards Corps:

"Ask us for Mitterand, we'll deliver him to you with his hands and feet tied, but Rajavi's security is ten times greater!"

Mohsen Reza'i admits foiled terrorist attempts against Massoud Rajavi

Nearly two months have passed since the historic flight of Massoud Rajavi to Iraq. The initial effects of this move on the growth and heightening of the Resistance movement and the spread of social protests is becoming clearer to the Khomeini regime every day.

Hence, Massoud Rajavi's flight has become one of the issues of the day in speeches by officials of the regime, each of whom has approached the matter from a different angle.

On July 21, Mohsen Reza'i, the Commander of the Guards Corps, the institution for repression which throughout the country daily tastes the bitter blows of the armed Resistance forces, delivered a speech expressing his rage at the activities of the spokesman of the Iranian people's legitimate Resistance during his residence

Continued on Page 3

U.S. expels Khomeini diplomat

Turkey: Target of Khomeini's exported terrorism?

Iranian disabled team expelled from Wheelchair Games in Britain

Page 4

"Iran Liberation" is the newsletter of the People's Mujahadeen of Iran operated by Massoud Rajavi which is on the air as the Voice of the Mujahadeen-e-Khalq.

USSR. The station initially took a pro-Khomeini line after it became clear the Shah was on his way out. Then, after Khomeini took power and outlawed the Tudeh party, the station shifted into an opposition mode again.

In 1962 a station calling itself the Free Voice of Iran began broadcasting from

Egypt during the period when Nasser and the Shah were feuding. Years later there was another Iranian clandestine using this name. In addition to all of this, Iranian authorities reportedly located and closed a number of communist-run, low power stations operating in and around Tehran in the early 1950's and again in 1979.

The Constitution of the National Council of Resistance for the Independence and Freedom of the Democratic Islamic Republic of Iran

Article One:

The National Council of Resistance has been formed to overthrow the Khomeini regime and to establish the Provisional Government.

Article Two:

Until the formation of the National Legislative and Constituent Assembly and declaration of its readiness to assume its responsibility, this Council will undertake temporary duties of the state's legislation and supervision of the administration of the country's affairs.

Article Three:

Every personality or political current whose membership of the Council is accepted, is entitled to one vote.

Article Four:

The Council's decisions are made with the approval of two-thirds of the attending members provided that no objection is made by any of the member-organisations.

Article Five:

Acceptance to the Council of any new member requires the applicant's undertaking of the programme of the Council



The National Council of Resistance, the umbrella organization in which Rajavi plays a strong role, has its own constitution.

"Workers of the World, Unite!" proclaims this "programme" of the Communist Party of Iran which is connected with several Iranian clandestine stations.



PROGRAMME OF THE COMMUNIST PARTY OF IRAN

Adopted by the Founding Congress of the Communist Party of Iran

September 1983

Still Going Strong

The present regime, with its emphasis on fundamentalist Islam, its repression, its long war with Iraq and its hatred of both the US and the USSR, gives many groups excuses to set up clandestine radios. At least a dozen such stations have been active over recent years and, actually, its surprising there haven't been even more than that! Sorting out which is which and who is behind them, however, is an extremely difficult proposition. It is a pretty safe bet that even someone who could speak all the languages involved and could hear all of the stations at S9 signal levels would still have problems fitting all of the pieces together.

Station names are often very similar or are changed from time to time. Some of the groups behind the stations have different sections which run separate stations or use more than one name. Frequencies used by many of the stations can vary considerably, as can the broadcast hours. Some stations share the same transmitter facility. There is a great deal of conflicting information in some cases and informational blanks on others. It is even difficult to be certain just which ones are active at any given time. The only people who probably have some kind of real fix on all of this are the Iranian government's radio monitors in Tehran whose duty it is to keep track of such things.

The vast majority of the time on these stations is devoted to programs in Farsi (Persian), the language of Iran. Of course, Kur-

dish-related stations broadcast in that language and there are one or two others which receive some attention. The only English aired consists of station identification announcements on Iran's Flag of Freedom Radio.

Hear Here

Although some of the Iranian clandestines can be heard by North American monitors, a larger number are probably beyond the reach of our receivers and longwires. Many of the stations use fairly low power and operate on frequencies and at times which are just not propagationally possible for us. Still, one never knows when a schedule change might be made that would make things more favorable. Either way, the intrepid world monitor is interested in these stations whether they can be easily tuned in or not. Right?

So, as best we can sort it out, here's a look at the current anti-Iranian broadcasting scene:

Iran's Flag of Freedom Radio: This is the voice of the Front for the Liberation of Iran, headed by ex-Prime Minister Ami Amini and is rumored to be funded through the estate of the late Egyptian President Anwar Sadat, along with money from the Shah's family, plus the CIA. It was previously known as the Voice of Liberation of Iran (R. Nejat-e-Iran) and R. Vatan (homeland) and is pro-monarchist in outlook (not surprising, considering its alleged backers).

This organization, supposedly with CIA help, was responsible for the eleven minute interruption of Iranian TV for a message by Reza Shah II a while back. It beams from a transmitter in Egypt (also

used for broadcasts of the Anti-Afghanistan Voice of Unity) and claims to have clandestine transmitters inside Iran, too.

Flag of Freedom broadcasts begin with an 8-note piano interval signal and are scheduled at 1630-1830 UTC on 11615 and 15560 kHz; also 0330-0530 on 7080 and 15555. Some ID's are in English, and some programs are in Azeri, but most broadcasts are in Farsi. The station has been active since '83 and has QSL'd quite a few listener reception reports. Addresses include P.O. Box 535, London NW10, England, and P.O. Box 201225, D-5300 Bonn 2, Federal Republic of Germany. One address recently circulated (20 rue de Condorcet, 75009 Paris) is a dud, so save your postage.

Radio Iran is the station of the Nat'l. Resistance Movement of Iran, headed by ex-Prime Minister Shapour Bakhtiar, who'd like to see a constitutional transfer of power in Iran. Bakhtiar had the PM's job briefly between the Shah's exit and Khomeini's arrival. He quickly dissolved Savak (the secret police), but was out of office within a month of Khomeini assuming power. With Khomeini now out of the picture, his hopes have risen again.

R. Iran began in '80 as the Free Voice of Iran. At that time there was another "Radio Iran," but that operation is now untraced. Until last year or so, this station was drawing on a hefty bank of frequencies: 7075, 7175, 9400, 9585, 9594, 11490, 11750, 15560, and 15685 kHz via 250 kW and 500 kW Iraqi government transmitters. Of late, most activity has been on 7075 and 9400 kHz.

Broadcasts in Farsi are at 0230-0330, 0400-0500, 1330-1430, and 1830-1930. It's been heard in North America many times and sometimes QSL's reports sent to 17 Blvd. Raspail, 75007 Paris, France. For some unknown reason, however, a goodly number of reports sent to that address are bounced by the French postal authorities.

Voice of the Mujahadeen-e-Khalq is an operation of the National Council of Resistance, an umbrella organization for several groups that would like to be in power in Iran. Some time ago the broadcasts of this station were more extensive than at present. There were even one or two loggings in North America around 0300 UTC on 5960 kHz. Now the station operates from 0600 UTC on 9545 kHz, and perhaps 1600-1900 UTC on 7125 (or 7130) kHz, also 5990 kHz. Other former frequencies are 6100, 7180, 9580, and 9595 kHz. Claims to be located in frontier region of Iran, but is surely inside Iraq, probably from R. Baghdad transmitter sites. The

sign-on incorporates the sound of machine gun fire and an aircraft roaring past. A symphonic anthem lasts for about five minutes.

This station supports Massoud Rajavi, honcho of the People's Mujahadeen Organization of Iran. Don't let the word Mujahadeen get you thinking that these folks have anything whatsoever to do with the Afghan Mujahadeen; indeed, this organization supported the Soviet invasion of Afghanistan!

In the U.S., an affiliate is known as the Moslem Iranian Student's Society. The main organization is based in Paris, and is better known as the Mujahadeen-e-Khalq, or "People's Struggle," or "People's Crusade." Rajavi's group had a hand in toppling the Shah, and possibly played some role in the U.S. hostage situation. Later, the group split with the government when fundamentalist clergy gained more governing power. Rajavi's group then started their former political cronies and in 1981, Rajavi beat a retreat to Paris.

According to U.S. Dept. of State information,

the group is an anti-American, anti-democratic militant terrorist organization. Rajavi wants a Shiite Islamic state, but with a Marxist slant. Rajavi has received assistance and training from the PLO. The National Council, however, tries hard to present a moderate image of itself.

Radio Iran Toilers is one of several varieties of communist stations beaming broadcasts at Iran. Officially, this one belongs to the Tudeh Party and beams from government facilities in Afghanistan (some of which are used for R. Afghanistan). The schedule is 1530-1630 UTC on 4775, 6230, and 10870 kHz, with a repeat at 0230-0330 UTC. It's been heard in North America a few times on 10870 kHz at sign on. The address is P.O. Box 49034, S-100 28 Stockholm, Sweden. This address is a mail drop, and although the station has been operating since '84, it's never been known to answer reports.

The Voice of The Communist Party of Iran has also been active since 1984, claiming to be in Kurdistan,

western Iran. The most recent sked shows it from Saturday to Thursday at 1700-1815 UTC, and 0315-0445 UTC on 3865 and 4519 (or 4529) kHz. On Fridays, they're on 1730-1830 and 0430-0600 UTC in Farsi. Broadcasts in Azerbaijani are 1830-1900 on Sunday and Wednesday, also 0445-0515 Monday and Thursday.

Reports indicate that coded messages usually follow at the end of regular broadcast segments. There are several addresses: O.I.S., Box 50040, S-104 05 Stockholm, Sweden; also Postfach 50142, D-5000 Cologne, Federal Republic of Germany; also F.H.I., C.P. 1064, I-10100 Turin, Italy; plus B.M., Box 2123, London WC1N 3XX, England; and B.P. 23, 75660 Paris Cedex 14, France. Some replies have been received.

The Voice of The Iranian Revolution, associated with the V. of The Communist Party of Iran, uses the same mailing addresses and quite probably the same transmitters as well. Programs are scheduled 1400-1520 in Surani Kurdish, 1520-1600 in Farsi, 0900-1015 in Surani Kurdish, and 1015-1045 in Farsi on (widely variable) 3864, 4420, and 6443 kHz. This station is operated by Komala, the Kurdistan Organization of the Communist Party of Iran and has been active since '82. Signs on with the international communist anthem. We know of no loggings of this station in North America.

The Voice of Iranian Kurdistan is run by the Iranian Kurdistan Democratic Party, a more mainstream Kurdish group that's part of the National Council of Resistance. It's been active, on an irregular basis, since about 1973. Programs are in Kurdish, Farsi, and Bahdinar at 0300-0430, 0855-1030, and also at 1330-1500 on (variable) 3935, 4100, 4890, and 7420 kHz, although not all are in use at any one time. Most active are 3935 and 4890 kHz. A flute/instrumental selection taking five minutes begins the broadcast. Transmitters thought to be in Iraq.

The Voice of The Fedai speaks for the Organization of the Iranian People's Fedai Guerillas, which wants a socialist "people's democratic republic" in Iran. Broadcasts in Farsi are scheduled at 1600-1655, then repeated at 0230-0325 and 0900-0955 on (variable) 3935 kHz and a secondary frequency varying between 4160 and 4250 kHz. It signs on with a song called "Fedai, Fedai," followed by the communist anthem, *The Internationale*. There have been a handful of loggings for this one in on the east coast of North America during the 0230 broadcast. The address is: A.C.A., B.P. 43, 94210 Fonteney-sous-Bois, France. It's thought that this station is affiliated with:

The Voice of The Worker, run by the Iran Worker's Association, has been active since mid-1987. Its Farsi schedule is 1700-1900 and 0330-0530 on 4108 kHz and 4160 kHz (both variable). A few east coast loggings known, but it's extremely hard to hear this one. Note that its schedule seems to mesh with that of the Voice of The Fedai. No address is known for The Voice of The Worker.

The Voice of The Mujahadeen of Iranian Bulchistan is the station of the movement whose name the station bears. It broadcasts in Buluchi. A partial sked id 0500-0600 and 1600-1700 UTC on 7180 and 9545 kHz from transmitters in Iraq. Not much else is known about this one.

Voice of The Crusader/Voice of The Kurdish Fighters. This puzzling station may be allied with one of the other clandestines or, in fact, may actually be one of the others using a different schedule and frequencies. Its brief schedule runs 1230-1515 on 3543 and 4258 kHz (both variable). Once, the broadcasts were carried over Radio Baghdad's facilities. The 1400-1515 segment, aired in Surani Kurdish, identifies as the Voice of the Kurdish Fighters. Broadcasts often include announcements intended for the "National Liberation Army" inside Iran. We know of no North American loggings, nor do we know of a mailing address.

So that's it. Quite a line-up of voices arrayed against the current Iranian government. Probably less than half of the various opposition factions have taken up clandestine broadcasting so we can only imagine how confusing things would be if they were all in the game. Given the intensity of the feelings and views involved it is likely that—even if Iran eventually has a much more moderate government, the voices of hate will still be there, waging verbal war at whoever holds power in Tehran. **PC**

NOTE: We are much indebted to Mr. Earnest R. Oney of Winchester, VA who supplied information about the early Iranian clandestine activity. Thank you.

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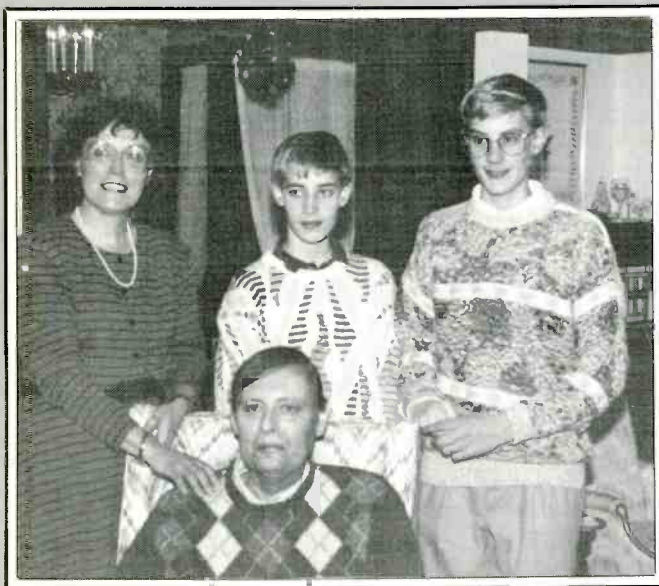
The world of communications has lost a great friend and devoted public servant. On Wednesday, May 8, 1989 Bob Hanson, W9AIF, passed away on the operating table during a delicate and enormously costly liver transplant operation.

Bob will be mourned by literally hundreds of thousands of individuals whose lives he touched throughout the world as a noted columnist . . . public service association executive (SCAN, REACT, Community Watch) . . . communications industry advertising and marketing manager . . . and active radio amateur.

But mourning alone cannot pay adequate tribute to Bob's total dedication to serving others—including his wife of 23 years, Marilyn, and two teenage sons, Peter and Andrew.



Since liver transplants are regarded by some as "experimental surgery," not one dime of the expense—estimated in excess of \$200,000—was covered by insurance. We simply cannot allow Bob's wonderful family to live with that impossible burden.



Your help is desperately needed. Immediately. Please, please send your contribution today. Make checks payable to: **Organ Transplant Fund Inc./Robert Hanson** a legally constituted non-profit organization. Any funds collected in excess of those required to pay actual medical expenses will be used to relieve similar transplant victims.

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South America's Annual Naval War Games

An Adventure in RTTY Monitoring

BY ROBERT MARGOLIS

Probably the most exciting viewing time of the year for many RTTY monitors in the United States is the annual Inter-American War Games held the third week of October by the naval war colleges in South America.

Last year, Escuela de Guerra Naval, Rio de Janeiro, Brazil, hosted IAWG-88, held Oct. 16-21, 1988. It was the 17th annual naval exercises which tested the readiness and preparedness of South America's navies to protect the Western hemisphere from any adversary.

The Soviet Union, usually portrayed as the aggressor in these games, is called the Green Forces. The South American navies, called the White Forces, are called upon to "defend" the continent from many types of Soviet ships and aircraft. Action covers theaters in the Atlantic and Pacific Oceans, and both seas usually look like junkyards at the end of the games because of the numerous ships, most of them merchant, that are "sunk," and aircraft that are "destroyed."

The United States is involved in these exercises, too, acting as the communications link between the wargaming countries via NBA, the U.S. naval base at Balboa, Panama. In IAWG-88, the USN coordinated the operations by relaying instructions from the game director in Rio de Janeiro, Brazil, to the war colleges. Frequencies used by the USN for RTTY traffic were 11570, 12205, 16194, 18067.5, 18550, 20350, and 22810 kHz. Messages were sent at 850/75R. We assume that these frequencies will be used again this year.

Participating war colleges last year were from Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela. Canada and Mexico acted as observers. The U.S. Navy was there with some of its warships, along with aircraft from Howard AFB, Panama.

Many types of reports are issued by RTTY. Reconnaissance, intelligence, damage, and weather are some of them. On one occasion during IAWG-88 a report was issued giving observations of the fictitious Hurricanes "Donna" and "Eric" in the Caribbean. Ironically, a real hurricane, "Joan," was racing toward Nicaragua and Costa Rica at the same time.

Protecting the Caribbean were warships from Colombia, the United States, and Venezuela. Colombia provided Caldas



The Venezuelan frigate, Almirante Brion (F-22).

(CM-52); Independiente (CM-54); and Pi-jao (SS-28), a submarine.

U.S. warships participating in the exercises were, USS Flatley (FFG-21), and USS Jack Williams (FFG-24), both frigates; USS Merrimack (AD-179), an oiler; USS Taurus (PHM-3), a hydrofoil; USS Gato (SSN-615) and USS Spadefish (SSN-668), both nuclear-powered attack submarines; and USS Virginia (CGN-38), a cruiser.

Venezuelan warships seeing duty were Mariscal Sucre (F-21), and Almirante Luis Brion (F-22), both guided missile frigates; Almirante Clemente (F-12); and Sabalo (S-31), a submarine.

Peru engaged two submarines in action elsewhere, Islay (S-35) and Arica (S-36).

White Forces aircraft included the Lockheed P-3C "Orion" anti-submarine reconnaissance aircraft, the Lockheed C-130 "Hercules" transport, the Northrop F-5 jet fighter, the Dassault Mirage 5 fighter-bomber, the Sikorsky SH-3D anti-submarine and transport helicopter, and the Hawker "Hunter" single-seat fighter.

Green Forces warships consisted of Kiev, and Moskva-class aircraft carriers; Kresta-, Kara-, and Sverdlov-class cruisers; Berezhn and Boris Chilikin, both replenishment ships; Balzam-, Okean-, and Primorye-

class intelligence collectors; a Kirov-class battle cruiser; an Oscar-class submarine; a Victor-class fleet submarine; a Sovremenny-class guided missile destroyer; Koni-class frigates; Alligator-class LST; Primorye, a floating dock; and Slava, type not learned.

Before the war exercises ended, the Kiev wound up with its flight deck afire; the Moskva-class aircraft carrier, the Kara- and Kresta-class cruisers, the Kirov, and the guided missile destroyer suffered impacts; Berezina and Primorye had fires; and Boris Chilikin, the Sverdlov-class cruiser, the Balzam- and Okean-class ships, the Alligator-class LST and the Slava-class vessel were sunk. The two submarines also were sent to Davy Jones' Locker.

Some White Forces warship theoretical casualties were the USS Virginia, which suffered the loss of secondary artillery; and the sinkings of "D-40," Carbajal (FF), Boyaca (DE-16), and "S-31," the Venezuelan submarine Sabalo.

A number of aircraft were destroyed, including a TU-95 "Bear" strategic bomber and three "Hunters" of the Green Forces, and a White Forces Hawker Hunter.

Two war theatres were being waged, a "European Theatre," which was peripheral to the main "American Theatre," where



Venezuela's Almirante Clemente (F-12).



The Colombian frigate, Independiente (CM-54).

Some of Last Year's Participants (Which Ships Will Be Back This Year?)

Colombia:

Caldas (CM-52)	Callsign HKMA
Independiente (CM-54)	5KNM
Pijao (SS-28)	5KJK

Peru:

Africa (S-36)	OBAL
Islay (S-35)	OBAK

United States of America:

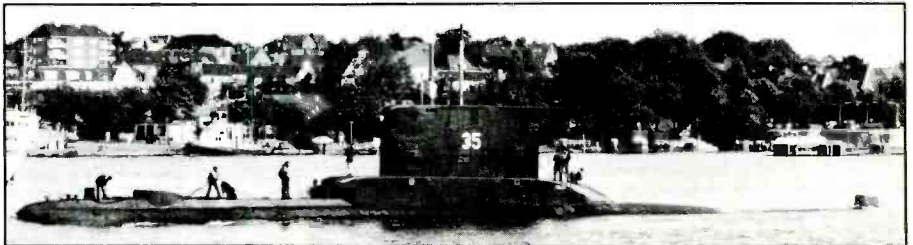
USS Flatley (FFG-21)	NJHF
USS Gato (SSN-615)	NDUA
USS Jack Williams (FFG-24)	NNJW
USS Merrimack (AD-179)	NDKH
USS Spadefish (SSN-668)	NKPZ
USS Taurus (PHM-3)	NHCN
USS Virginia (CGN-38)	NVYA

Venezuela:

Almirante Brion (F-22)	?
Almirante Clemente (F-12)	?
Mariscal Sucre (F-21)	?
Sabalo (S-31)	?

Note: These are some of the naval vessels that participated in IAWG-88. Official callsigns are shown for informational purposes only as tactical ID's may be used on the air. All submarines (except U.S.) are West German 209 type (same as Greek Glaukos type).

This is the Islay (S-35), one of two diesel-powered subs sent by Peru.



most of the action took place on teletype copy.

Within the European theatre, the Green Forces had consolidated a beachhead on the northern German front and were disembarking large troop contingents on the second day of the war games. Many enemy submarines had been destroyed by White Forces in the North Atlantic, and the maritime resupply of Europe continued to develop with no major interference.

On the third day, the Green Forces had consolidated the beach head in the German north front, and had moved to the south. "Intelligence indicates that, in spite of the large number of submarines sunk in the North Atlantic, Green Forces are still trying to isolate Europe from the rest of the world" one teletype report read.

By the fourth day the Allied Forces had stopped the advance of the Green Forces toward southern Germany, destroying a large number of Green units. The allies had "decoded" a message from the commander of the Green Forces to all his forces at sea, directing them to concentrate in the European theatre. Meanwhile, the resupply of Europe remained normal.

Examples of some of the RTTY traffic you would have monitored had you tuned into

the IAWG net are:

- Air Force TF two one five sunk SOVREMMENY.

- P3C TF 201 attacked Green Force with harpoon missiles. Balzam maximum speed six course 150.

- Radio intelligence station La Orchila intercepted loud and clear broadcast codified 15000 kHz to three units unknowledge indicating supposed course 270 immediate execute.

- Coordinate 21 attack units from G 224.5.4 with two attack units fm TF 216 for combined surface attack with CTU 202.1.1 against 2 Konis reported at 15N 77W.

- Green merchant ship in LAT 31 12 S LONG 071 51 W probably involved in mining operations. Report any action taken on that ship.

- 30-S-32 send 2 torpedoes MK-37

against SS in 1210N-6012kW. Sonar report high. Speed evasive counter measure and lost contact.

- Naval intelligence reports the presence of a Green submarine (not yellow like the Beatles'—Ed.), possibly the Victor III class, operating near the route kilo. Probably will attack during the day.

Observers for the Canadian Forces Military War College, Halifax, NS, elated with the "excellent success of the IAWG-88 objectives," said they would recommend that Canada fully participate in IAWG-89, according to a teletype message sent the last day of the war games.

As is the case year after year, the White Forces "defeat" the Green Forces and give us monitors many hours of exciting teletype traffic to read. Now's the time to make ready for IAWG-89, Oct. 23-Oct. 27, 1989. **PC**

Pop'Comm Reviews: Realistic's PRO-2005 Scanner

Packs 100 More Memory Channels & Increased Sensitivity in Smaller Package Than Predecessor

RUSS PRINCE, K0DAI

The new Radio Shack PRO-2005 programmable scanner has replaced the PRO-2004 in the line, and it continues the traditions of the earlier model. For amateur use, it covers the ham bands between 10 meters and 1.3 GHz., including 10 meters (28.0 to 29.7 MHz), 6 meters (50 to 54 MHz), 2 meters (144 to 148 MHz), and the rest. Actual coverage ranges include 25 MHz - 520 MHz, 760 MHz - 823.945 MHz, 851 MHz - 868.945 MHz, and 896 - 1300 MHz.

The PRO-2005 has 400 memories, an increase of 100 from the standard unmodified PRO-2004. They are divided into 10 banks of 40 memories each. Each bank may be programmed for automatic seeking of unknown signals and frequencies using the Limit Scan feature. Individual banks of frequencies can be locked out, and individual frequencies within a bank can be locked out, such as the continuous weather broadcasts. Scanning speeds of 8 or 16 channels per second can be selected from the front-panel keypad.

Standard modes include AM, Narrow FM (NFM) and Wide FM (WFM). AM mode is automatically selected for civilian aircraft frequencies (108 - 135.995 MHz) and 10 - 11 meters (25.0 - 29.995 MHz). NFM is selected for all other ranges except the broadcast FM band between 87.5 and 107.995 MHz.

Fortunately, the mode, as well as the scanning steps, i.e., 5 kHz, 12.5 kHz or 50 kHz, may also be selected manually with the Mode and Step buttons on the front control panel. For example, when a frequency, such as 309.500 is entered, the default mode is NFM. To change the mode to AM, press the Mode button until AM appears in the display window. The AM mode indicator flashes whenever the scanner stops on that frequency. You can also perform a limited band scan operation using a non-standard mode, helpful when scanning the 225 - 400 MHz military zero bands which are filled with AM transmissions. In the limited band scan mode, mode and stepping can be changed on the fly by simply pressing the mode or step buttons while a limited band scan is in progress.

Frequencies found during a limited band scan search can be easily written into permanent memory by pushing a couple of but-



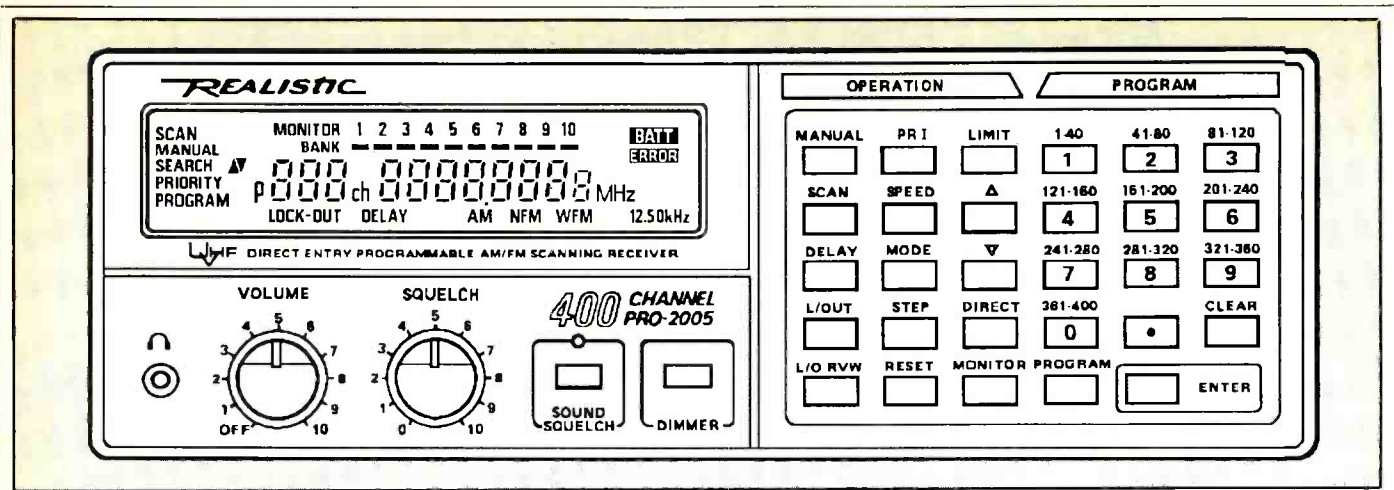
tons. The limited band scan memory holds 10 additional frequencies beyond the 400 permanent memories.

Sensitivity on Narrow FM is a very good 0.5 μ V for 20 dB S/N at 3 kHz deviation from 25 MHz through 1.1 GHz. AM sensitivity for the same range of frequencies is 2 μ V for 20 dB S/N at 60% modulation, while wideband FM sensitivity is 3 μ V for 30 dB S/N at 22.5 kHz deviation. Above 1.1 GHz, sensitivity drops off substantially. Narrow FM sensitivity falls to 3 μ V, Wide FM drops to 10 μ V, and AM sensitivity drops to 5 μ V between 1.1 and 1.3 GHz, but since there is no AM up there, the AM drop is relatively insignificant.

I live in the southern suburbs of Minneapolis, MN and with a R/S discone monitor antenna side-mounted 35 feet up my tower, I regularly pull in weather broadcasts from Rochester, MN, 65 miles to the south, and marine radio signals from the Mississippi and St. Croix Rivers, 20 to 25 miles distant.

An interesting frequency range is 46 to 50 MHz for cordless telephones. It's amazing how many of these signals (and baby room monitors) that can be heard on this receiver with a good outdoor antenna!

Mobile cellular telephone frequencies have been purposefully blocked out on the PRO-2005, however I understand a mod is possible similar to the simple diode removal



used in the PRO-2004.

Other features of this high-performance receiver include a telescoping antenna, a built-in AC power supply, a blue backlit LCD display which shows both the channel storage number as well as the actual frequency, a selectable 2-second scan delay, 9-volt battery backup for the memories, a built-in 3" speaker driven by a 1.3 watt audio amplifier, headphone and external speaker connections, a BNC style external antenna input, a TAPE OUT jack on the back panel, and a 13.8 VDC power input jack to power the rig from DC power sources. The front "feet" fold out to elevate the front panel for better viewing.

A programmable priority frequency can be set to any of the 400 frequencies in memory. If 167.050 MHz in memory position 42 is to be your priority frequency while scanning other memory banks, the scanner will be look at your priority frequency once every 2 seconds and lock on if a signal is heard. Scanning automatically resumes when the priority frequency drops out.

The PRO-2005 receiver is physically two inches narrower than the PRO-2004, measuring just 2 1/8" high by 8 1/2" wide by 8 1/4" deep. It weighs only 2.4 pounds. The case is made of medium gray plastic and the LCD display has a pleasant blue backlight with a dimmer control. The 29 control buttons are an off-white rubberized material and provide a good tactile feel. I've heard some grumbling about the new all-plastic case, however it appears sturdy and I have experienced no receiver interference as a result of running other electronic equipment, i.e., two computers, six amateur rigs, and a TV. Inside the PRO-2005, the key mixer modules are completely contained within metal shielded boxes. The few birdies I have found correspond with those listed in the operators guide which came with the unit and pose no serious problems.

A nifty feature is the Lockout Review button on the front panel. If you've locked out one or more continuous or busy frequencies from scanning, and later want to review them, simply press the Lockout Review button and each frequency which is locked out

will temporarily be activated in sequence and displayed on the panel with each press of the button. This saves time, especially when trying to remember which few of the 400 memories have been locked out!

Overall, the rig is an exceptionally versatile scanner for the monitor fan interested in a wide-coverage receiver. The new keyboard layout is easy to work and can be programmed easily. The PRO-2005 keyboard is nearly vertical, unlike the sloped keyboard of the PRO-2004, and features real buttons rather than the sometimes unresponsive membrane touchpad style used on the PRO-2004. This is a definite plus in the 2005's favor as far as I'm concerned!

The frequency banks, each of which hold 40 frequencies, are large enough to put an entire service into one bank, such as 2-meter ham, marine, 220 and 440 ham, 10 meters, federal, public service, FM broadcast, aircraft, CB, cordless telephone, military aircraft and others. Banks can be switched in and out at will depending on your listening pleasure.

The limit-scan feature allows programming of 10 separate limit scan frequency pairs and you can jump quickly from one to another by selecting a new bank.

If you already own the earlier PRO-2004 and have made the 400 frequency modification, you may not see enough difference to rush out and purchase a new PRO-2005. But, if you don't already own a mega-memory, wide coverage quality scanner, this one should be given your consideration. The programming is intuitive (read that "easy") and the keyboard has a positive feel and response. You can make this scanner do just about anything you can imagine without constantly referring to the manual. I've used mine in the house, in the car and on a boat with excellent results. It looks nice enough that my XYL, on rare occasion, has even let me bring it into the family room on slow TV nights! The PRO-2005 is available at all Radio Shack stores for \$419.95. The manual is instructive and filled with illustrations. The PRO-2005 receiver is expensive, but is a quality, full-featured and versatile receiver.

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CIRCLE 93 ON READER SERVICE CARD

Radio Of Yesteryear

Tracking Down The Stations of Early Wireless And Broadcasting

BY ALICE BRANNIGAN

There has never been a shortage of broadcasters who made the claim that they were the first of the breed. Such claims usually trace back to experimental transmissions that took place prior to September of 1921, when the government began issuing the first licenses for commercial broadcasting.

Unfortunately, many early stations that once were part of the "We Were First" claiming stakes didn't operate for very long. Their claims, regardless of how valid they might have been simply flickered out with the passage of time. Whenever we discover one of these stations, we like to revive those claims on behalf of the long-forgotten pioneer broadcasters just to keep them alive. Last month we told you about one. This month we have another early broadcaster that used to say it was first.

That station started out as Experimental station 1XE, and first broadcast several music recordings on March 4, 1916. Two weeks later, a program lasting several hours was transmitted. Station 1XE was far from being the typical conglomeration of haphazard wires and breadboard equipment that experimenters were setting up in their garages and attics. This station had a 300 foot antenna tower, it was owned by a wireless equipment manufacturer, and it was bankrolled by J.P. Morgan. Well, sort of.

Station 1XE, in Medford Hillside, MA was owned by The American Radio and Research Corp., manufacturer of Amrad transmitters and receivers. Amrad began in business in 1915 as a venture of J. Pierpont Morgan, not the famous millionaire who had started General Electric and U.S. Steel, but his son who became heir to the empire upon the passing of his father in 1913. Junior wasn't the financial wizard that his dad had been. In fact, he was a wastrel who had devised many delightful ways to thin out the family fortune.

When J.P. Jr. started Amrad, first thing he did was to put his old friend, Harold J. Power, in charge of the operation. H.J. was a ham who had also been a ship telegrapher, but had never before run a business venture. He quickly built facilities near the Tufts University campus, and hired people to do "research" into what products Amrad might produce.

Soon after, the occasion of WWI inspired Amrad to manufacture some equipment that was purchased by the military forces.



WGI's 100 watt transmitter is at the right of this photo. It was heard in Kansas, Texas, and Cuba.

This turned into a thriving business that lasted until just after the end of the war. When that market dried up, Amrad sustained itself in reduced circumstances by doing private contract manufacturing in various non-radio fields, including small electric motors. Regular 1XE broadcasts began in October of 1919.

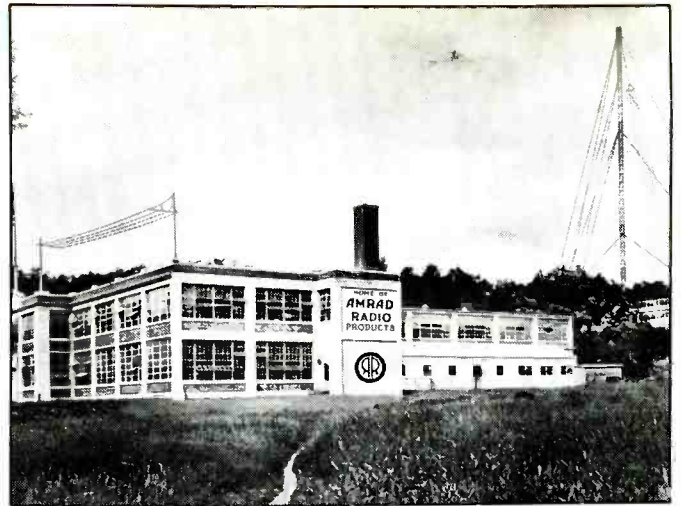
In early 1920, H.J. Power convinced J.P. Jr. that there was lots of money to be made in the continued manufacture of the electric motors, plus the addition of a new line of modular components that could be assembled in different combinations to become receivers for the anticipated booming ham and broadcast markets. Junior promptly



Possibly the world's first YL broadcaster, Eunice R. Thompson, shown during one of her daily programs over WGI.



View of Amrad's facilities in 1916. Note the tower just to the right of the building.



By late in 1920, Amrad (and 1XE) had acquired very impressive digs.

gave Power the green light to build a new 200,000 ft. facility and double the workforce to a total of 150. This was accomplished by late summer of 1920.

Although the modular concept was a commercial flop, Amrad was successful with a dual-component receiver announced in late 1921 to coincide with the clamor to hear the first commercially licensed broadcasters. Between September and the end of 1921, some 25 such stations were licensed. Dealers were almost hysterical for product to sell, placing huge orders and expecting to actually receive only a small percentage of what they had requested. No ball of fire, Amrad began hiring additional personnel and tooling up to produce these receivers in quantities that matched the inflated orders that had come in. Sadly, by the time Amrad's production line began grinding out equipment in large numbers, the public's initial wild buying spree for receivers had been over for several months. Amrad was stuck with lots of receivers. What's worse, in that era of rapid technological development, their designs were old hat.

The year 1922 saw Amrad's Experimental 1XE acquire a commercial license with the callsign WGI. It was authorized to run 100 watts on 833 kHz, later moving to 1150 kHz. However, those were dark days for Amrad because while J.P. Jr. may not have had too many smarts, he at least knew that after shelling out almost a million dollars to start and operate Amrad, putting lots more money into the project might not be too clever. Operating funds were borrowed from other sources, and the obsolete equipment was somewhat redesigned to make it more modern, but in early 1923, Amrad was laying off employees.

WGI, which also operated under the callsign WARC, continued in operation. During its tenure as an active broadcaster 1XE/WGI/WARC claimed to have been the only broadcasting station in New England before 1920, the first broadcaster to send out col-



The twin engine Messerschmitt Bf 110 was Germany's best night fighter and bomber interceptor, but when the RAF jammed its HF communications frequencies, a novel approach was called for. Enter Annemarie on 968 kHz.

lege lectures, weather reports, children's programs, dramas, religious programs, and special programs directed towards the women in its audience. One of Amrad's employees, Eunice R. Thompson, appeared regularly on the station, and became the first woman broadcaster in New England, possibly in the nation or the world.

Despite the benefits that WGI provided Amrad, and a line of reasonably good equipment, the company wasn't able to sustain itself in the highly competitive marketplace. The company was sinking, finally entering receivership in 1925. It wasn't long after that when WGI/WARC called it quits, too. Amrad's physical assets, name, and patent licenses were bought up (at a bargain price) by manufacturer Powel Crosley, Jr. In the August issue we told you about Powel Crosley, Jr., and his connection with early broadcaster 8XB.

The Amrad name was continued by Crosley into 1930 when the Medford Hillside facility was shut down, 1XE/WGI/

WARC having been several years on the road to obscurity by that time.

Radio Wars

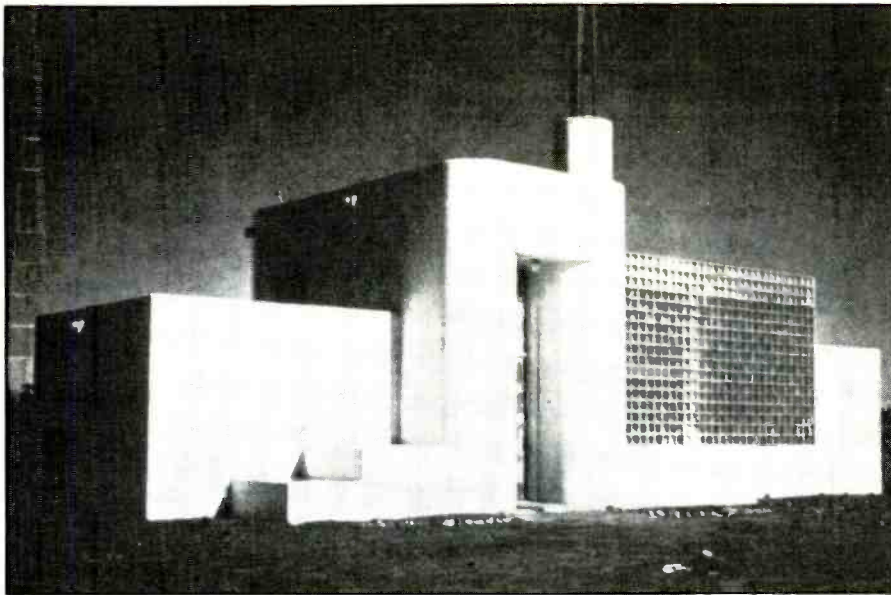
Those interested in the novel uses of radio during wartime will want to know about the German Forces Broadcasting Station *Annemarie*, which operated on 968 kHz from Muhlacker, during WWII.

The German Air Force (or *Luftwaffe*, as it was known during WWII) would send up interceptor aircraft in response to the many British RAF night bombing runs over German territories. RAF bombers carried an assortment of electronic jamming transmitters intended to mess up the enemy's radar and also ground/air voice communications. This served to delay the appearance on scene of the interceptors since they couldn't receive instructions from the ground directing them to the RAF bombing targets.

Schemes to defeat the RAF jamming included simulcasting the needed information over several communications frequencies, and others of a similar nature. None of these were effective. Plain and simple, until and unless the *Luftwaffe* interceptors could get the RAF bombers into sight or radar contact, they were wholly dependent upon instructions radioed from ground command posts. And all of those frequencies were often being jammed by the RAF.

The *Annemarie* station normally broadcast dance music and entertainment for the German military forces. Its programs weren't jammed. That gave someone the idea to use it to send disguised instructions to the interceptor aircraft in the instances when jamming made HF communications impossible. In December of 1943, an Executive Order from the German High Command spelled it out in detail.

These instructions pointed out that there were eight major bombing areas, each designated by a distinctive code name such as *Quelle*, *Otto*, *Berta*, etc. Eight musical instruments and styles were assigned to be



As shown in our May issue, here's how KFPY looked in the 1940's. (Courtesy Bill Farley, WA5FLG.)

taken as representing those areas. A violin represented the zone with the code name *Otto*, while an accordion indicated the zone known as *Ponto*.

If the RAF bombers were at work in the zone called *Nine*, the station would broadcast piano selections so long as they remained there. As a further refinement of the technique, each zone was split into northern and southern halves. If the northern half was the area under attack, the station announcer would introduce each record individually. If the recordings were announced two at a time, then the interceptors were to fly to the southern half of the zone.

Since the *Annemarie* station normally

played only dance music, the sudden broadcasting of this distinctive music simultaneously with RAF bombing raids and jammed HF communications frequencies was easily spotted by the *Luftwaffe* pilots as indicating flight instructions.

Note that HF jamming was not 100% effective, nor was it done at all times. Jamming had disadvantages, since the *Luftwaffe* fighters could home in on the jamming signals. Between the information that got passed on HF and that which went out undercover via *Annemarie*, the *Luftwaffe* managed to make the RAF's missions extremely dangerous.

While, on one level, the *Annemarie*

scheme was clever, it had a rather glaring flaw. What music would the station play in the event a large number of RAF bomber formations flew into several different zones? The *Luftwaffe* Executive Order had no easy answers, noting that under such conditions, the *Generalkommando* would decide what music would be played. That must have been a never-to-be-forgotten *Lucky Strike Hit Parade* medley!

Broadcasting disguised and hidden information and instructions to military forces, underground forces, insurgents, provocateurs, saboteurs, smugglers, and others dates back to the early days of broadcasting. It was used extensively by the Allies and the Axis forces throughout WWII. Indeed, it is still used effectively by a number of government-operated international shortwave broadcast stations.

In the case of *Annemarie*, undoubtedly it was the most exciting aspect of this forces' station's otherwise routine operations on 968 kHz.

Update

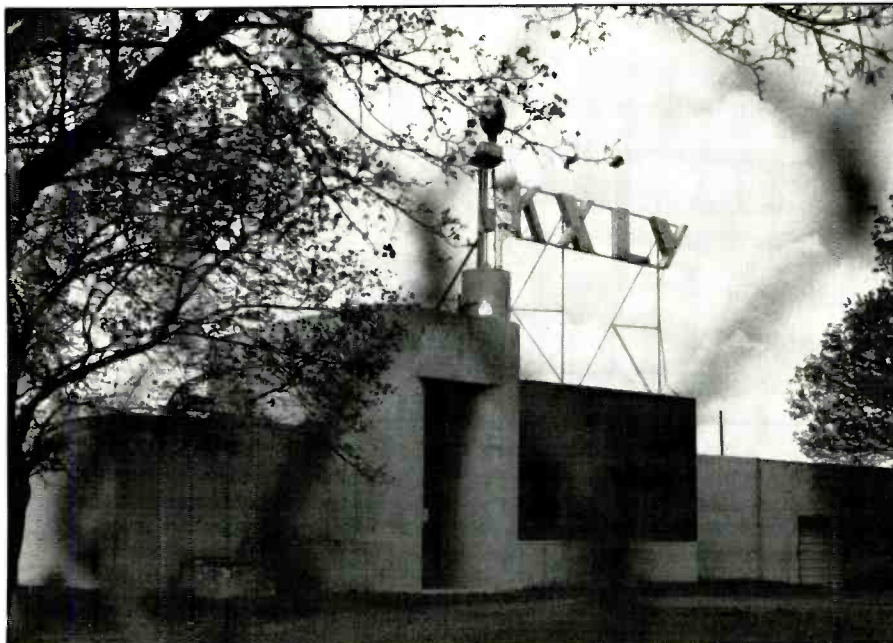
In the May issue we presented some information and a photo of a broadcaster in Spokane, WA that began operating in 1922 as KFZ, then became KFPY, and is presently KXLY on 920 kHz. The photo we had was of the stunning Art Deco style facilities the station had built in the early 1940's.

Soon after the May issue appeared, we received a letter from John P. Myers, Registered Monitor KWA7CH, of Spokane. John, who is a professional driver for Spokane Transit, wrote that the structure in the photo is still in use by KXLY. It sits about 300 feet off the main road and is surrounded by a security fence. One Saturday, John stopped by and took some photos to send to us. He also showed the May issue of *POP'COMM* to the folks at the station. They enjoyed seeing the item on their station. And we certainly appreciated John's efforts to let us know the current status of the building shown in the photo we ran last May.

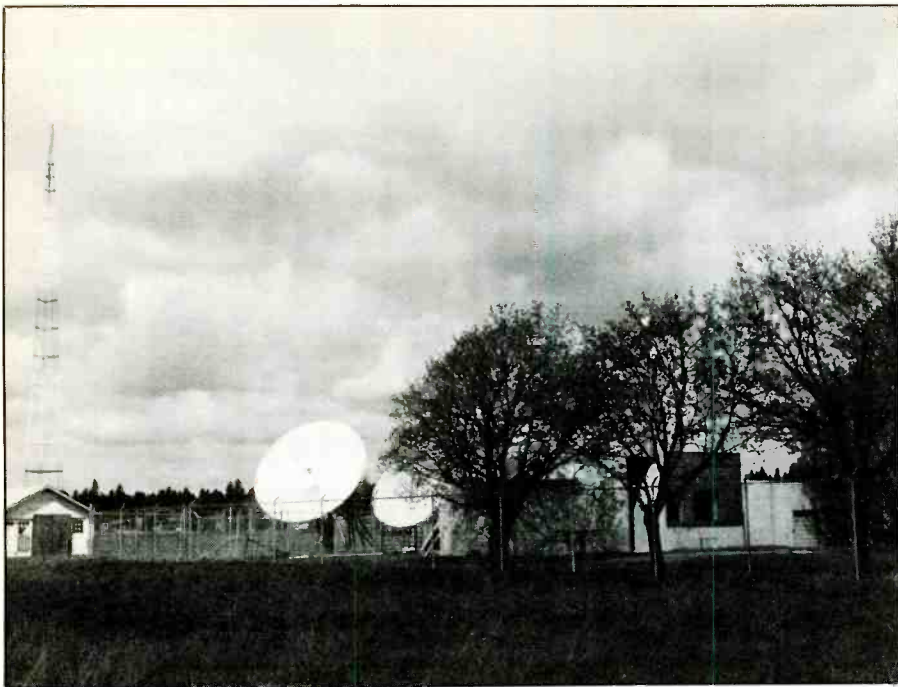
Marketing Genius

Chuck Grecco, Woodside, NY sent us a copy of a story he saw in the March '89 issue of *The Numismatist*, a publication for coin collectors. The story, by Jesse Patrick, was called *Pefferbills* and told about how a dynamic merchandising genius named E.F. Peffer came to issue his own paper money in Stockton, CA during the April, 1933 "bank holiday" declared by the government. An example of one of these notes was shown, complete with radio towers and the call sign KGDM. Chuck thought we'd be interested. We were.

It appears that KGDM started operation in November of 1926 with 5 watts on 1380 kHz. The first owner was Victor G. Koping of Stockton. Soon after, though, it was purchased by E.F. Peffer who increased it to 10 watts and moved it to his music (pianos, phonograph records, etc.) store located at



KXLY is the present callsign for the old KFZ/KFPY. This is what their stunning building in Spokane looks like today. (Courtesy John P. Myers, KWA7CH.)



The back yard at KXLY displays two satellite dishes and, to the far left, the station's transmitting tower. The building itself is hidden behind the trees towards the center-right. (Courtesy John P. Myers, KWA7CH.)

42 South California Street in Stockton. In 1928, KGDM was operating on 1340 kHz, but in November of that year it moved to 1150 kHz and increased its power to 50 watts.

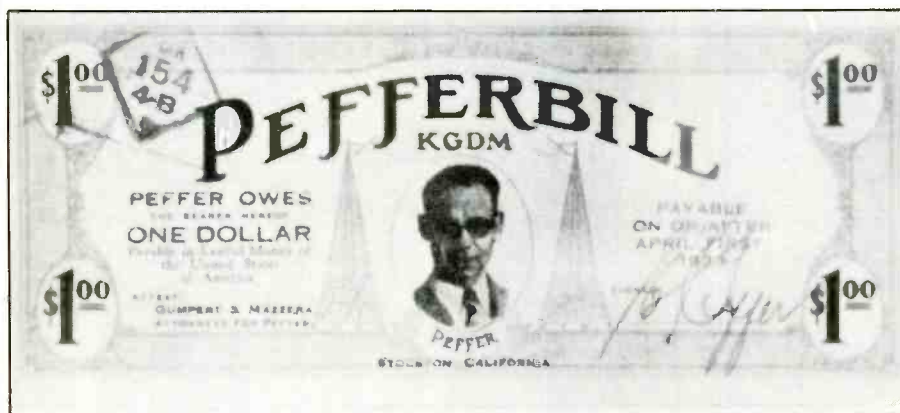
Peffer's business was thriving, having expanded to include radios, furniture, and household appliances. The store was also the location of Stockton's branch post office. KGDM was a natural for telling Stockton area residents about the store and its many innovative special offers such as free bonus gifts with purchases, no-interest credit, time-payment deals, free delivery for hundreds of miles, and similar. Peffer made a fortune and lived a princely and flamboyant lifestyle.

The store's delivery trucks were designed to look like railroad boxcars to remind custo-

mers that the low prices were because Peffer's bought from manufacturers in large "boxcar" lots. Each delivery truck also displayed the KGDM radio towers and call sign.

By the time the Great Depression had begun to grip the nation, KGDM was running 250 watts (later 1 kW) on 1100 kHz into its 224 ft. vertical antenna. Peffer was clever enough and sufficiently wealthy to have managed to maintain a solid business position while many other businesses were in dire straits, or else had folded completely.

With the government-ordered bank closings, the public became panicky. Peffer then issued his own privately backed scrip that could be used while the banks were closed. Peffer had such a strong reputation in Stockton that at least forty local merchants readily accepted the scrip. The scrip could



A \$1 "Pefferbill" Depression Scrip note issued in 1933. The towers and call sign of Stockton's KGDM are included in the design of this rare and highly collectible item. (Credit "The Numismatist." via Jesse Patrick.)

MFJ SHORTWAVE ACCESSORIES REMOTE ACTIVE ANTENNA

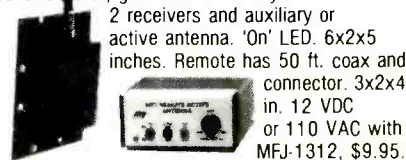
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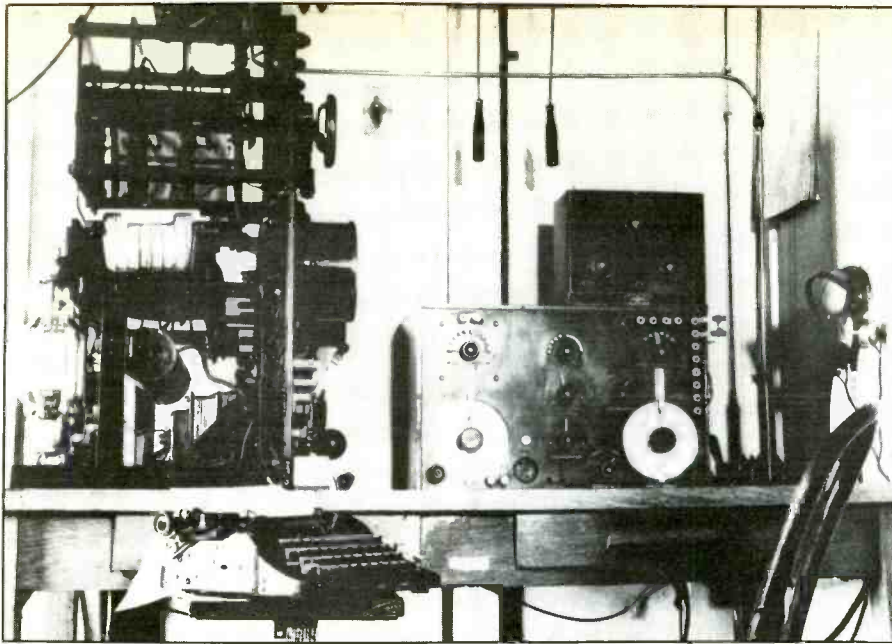
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This is the radio room "way back when" of the freighter S.S. John A. Kling. The ship's call-sign was KFEL. (Courtesy William M. Collins.)

be obtained by persons having accounts at Peffer's store, with the amount added to their account. When the banks reopened, Peffer's bank readily redeemed the scrip and debited the store's account.

As the 1940's rolled in, KGDM was oper-

ating with 5 kW on 1140 kHz. The studios were at 517 East Market St., while the transmitter was three miles southeast of the city on Highway 99. Peffer still owned the station at that time, and until quite some years after WWII. Peffer was an active business-

man all of his life, which lasted 96 years and ended in 1981.

Stockton's KGDM, per se, no longer exists in a way that the old timers would quickly recognize. These days, it's moved to Sacramento and runs 50 kW on 1140 kHz with the callsign KRAK. It's a popular country music station.

Ship Shape

Corpus Christi, TX reader William M. Collins passed along a photo of the radio shack aboard the S.S. John A. Kling, which he thinks may have been taken in the 1930's. No further information was provided in Bill's letter, although the wireless equipment in the photo looks more like it's from the 1920's than a decade later.

We did find that this was a 5,412 ton U.S. flag freighter that was owned by the Rockport Steamship Company. Although it wasn't in a 1919 directory we checked, it did show up in one published in 1924 as having the callsign KFEL. That same callsign was still assigned in a 1941 directory listing, although that was the most recent year we found the vessel shown.

That's it for this time. This column is always anxious to receive photos of old radio/wireless installations, old QSL's (photocopies, or originals if you don't want them returned), news clippings, old station directories, etc. Your help is welcomed and needed.

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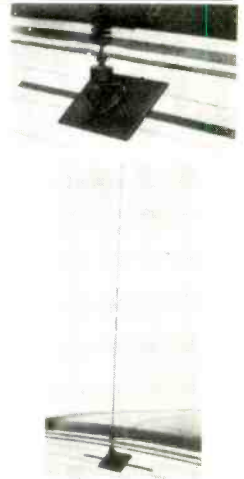


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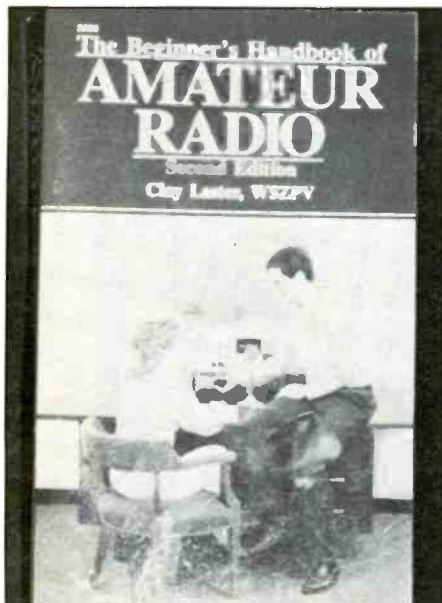
City _____

State _____

Zip _____

BOOKS YOU'LL LIKE!

BY R. L. SLATTERY



Getting Started

The Beginner's Handbook of Amateur Radio, by Clay Laster, W5ZPV, is a reasonably good way to embark upon a career in hamming. In its 424-pages, the book explains how ham radio got started and how it evolved. This, being the new 2nd Edition, has the latest information on the current status of the hobby.

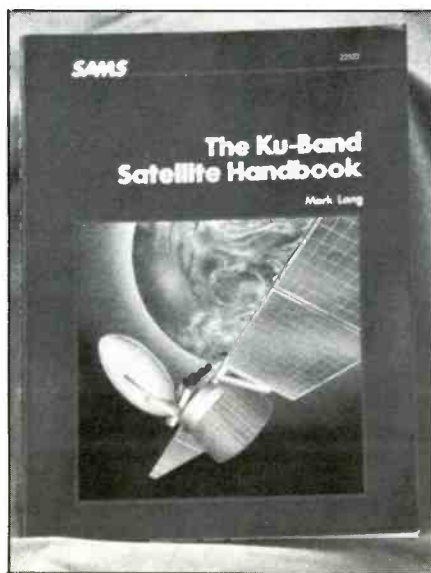
The book also clearly explains the fundamentals of communications theory, electronics, operating procedures, circuits, learning the code and everything you need to know to pass the Novice Class exam. While getting a Novice ham ticket certainly isn't difficult, it's something that is going to take some amount of basic preparation on the part of the prospective licensee. Some people overstudy, while others concentrate too much effort into some particular areas while neglecting others that are needed. A book such as this, therefore, is valuable in providing you with the proper proportions of the information mix to breeze through the test.

In the back of the book, there's a sample thirty-question multiple-choice Novice Class exam based on an actual FCC test. It's an excellent preview of what to expect. That is to say, if you can pass the book's test, there's little likelihood that the actual Novice Class exam will put you in a tailspin.

Laster's book is profusely illustrated with photos, tables, diagrams, and schematics in order to supplement the text and make everything as clear as possible. While there is an interesting chapter included that describes some of the more advanced techniques used in hamming (SSB, RTTY, Oscar, Packet, Moon Bounce, etc.), this is just

to let you know what is to come. It is, however, primarily a book that aspires to no more than getting a person started in hamming.

The book is well written and should be very helpful to persons in all age groups from teens to seniors. It comes from TAB Books, Inc., Blue Ridge Summit, PA 17294-0850. It should be available from any of TAB's many dealers, and the price is \$16.95.



Look, Up In The Sky!

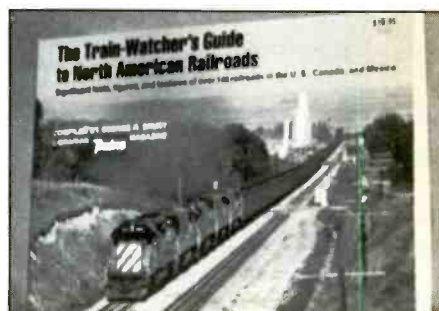
Satellites, as you may know, operate the specific assigned frequency bands, usually designated as code letters. Much of the commercial satellite usage has been in the C-band (5.7 to 7 GHz uplink, 3.4 to 4.8 GHz downlink).

The Ku-band (12.75 to 18.1 GHz uplink, 10.7 to 13.25 GHz downlink) is opening and has become the exciting new frontier in satellite technology. *The Ku-Band Satellite Handbook*, by Mark Long, describes how North American Ku-band satellites are now transmitting sports, news, movies, and other services that, in the past, had been within exclusive domain of C-band satellites.

Whether you're an aspiring satellite communications technician, or an industry insider, you'll find Long's book to be a handy reference to the latest developments in this exciting and rapidly changing field. You'll get a global tour of the existing 12 GHz satellite services, plus those that are soon to open with interactive video, voice, and data networks. You'll also get a close look at the hardware used, and the dish antennas (considerably smaller than the ones you're used to seeing for C-band reception).

You've probably heard of the coming DBS (Direct Broadcasting Satellites) era, and that's a Ku-band technology. This new technology has also developed its own methods of scrambling, cable TV applications, electronic news gathering, videoconferencing, transportable uplinks, dual-band equipment, and more. This fully illustrated 302-page book explains it all.

The Ku-Band Satellite Book, by Mark Long, sells for \$24.95. It comes from Howard W. Sams and Co., 4300 West 62nd Street, Indianapolis, IN 46268. Your nearest Sams dealer should be able to get it for you.



Frequencies On The Right Track

Monitoring railroad communications with a scanner has always been a popular aspect of VHF hobbying. Whether you do it from your home station, or if you prefer taking the handheld portable along and watching from trackside while you listen to the activity, there's never a dull moment on these frequencies.

The Train-Watcher's Guide To North American Railroads, by George A. Drury, is (next to the scanner itself) one of the best aids we've come across for getting the most enjoyment out of monitoring. The 224-page book is a ready reference to more than 140 railroads in the U.S., Canada, and Mexico; not only Class 1 and 2 railroads, but major short lines, commuter authorities, and terminal companies. Railroads are listed alphabetically, and the index has entries for nicknames and recently merged railroads. Information on the railroads includes a brief history and description of the system, address of the general offices, number of cars and locomotives, miles of railroad operated, principal radio frequencies, location of major shops and yards, junctions with other railroads, passenger routes, plus a photograph and small system map.

The frequencies and other information in the book was compiled from many sources, then double checked for accuracy by the railroads themselves in order to assure you of the most useful data possible. This book

satisfies the often heard request for a book that is more than a frequency directory, but a handy, easily transportable reference volume that supplies a huge amount of relevant information on the railroad systems being monitored.

The author, George Drury, is an expert on railroading. Since 1975, he has been the librarian at *Trains* magazines. He has amassed an enormous amount of data in this handy volume, which will be an asset when scanning North American railroad communications frequencies.

The Train-Watcher's Guide To North American Railroads is popularly priced at \$10.95, plus \$2 shipping/handling from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. NY State residents please include sales tax.

In Addition . . .

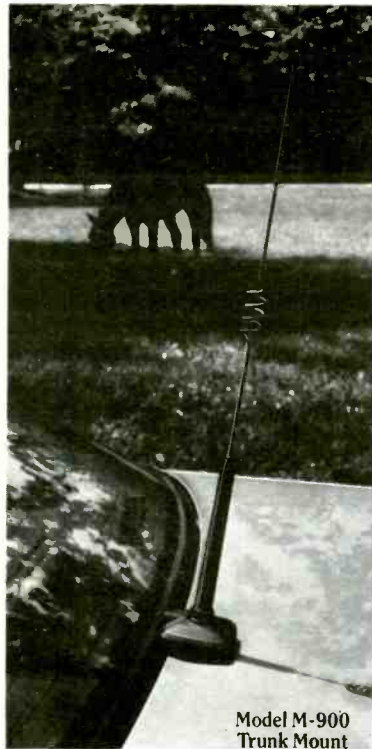
The 6th Edition of the *D/FW Directory* is an all-band frequency guide to the Dallas/Fort Worth area of Texas. The book covers about 5,600 listings from all portions of the frequency spectrum from VLF through microwaves, with listings for stations operating in various services and modes from ham stuff, to shortwave broadcast, to scanner activity, and whatever. The book was compiled by Ken Winters, N5AUX, who has done his usual fine job. It's a 153-page book available for \$19.95 from Basic Computer Services, P.O. Box 14193, Arlington, TX 76094-1193.

A publication from the Government provides a comprehensive assessment of America's communications and information sectors. *NTIA TELECOM 2000: Charting the Course For A New Century* identifies national communications and information priorities, both for today and the balance of the century.

Some issues of the report address and include the telecommunications infrastructure and universal information service in the year 2000; privacy, information flows and the protection of intellectual property in the information age; and international and domestic policymaking in the year 2000. The report also examines space communications and information systems; Federal utilization of telecommunications; film and video industries; communications and information in rural America; and many other topics relating America's entry into the information age.

This 672-page book, *NTIA TELECOM 2000: Charting the Course For A New Century*, stock number 003-000-00658-1, is available for \$20.00. Send payment to Dept. 36-CY, Superintendent of Documents, Washington, DC 20402-9325.

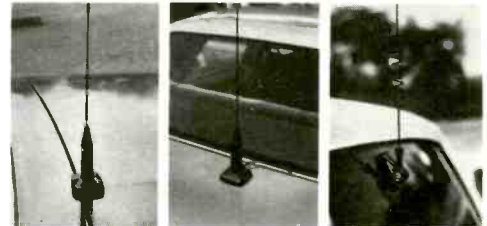
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DX'ing The World. . . From Inside The USSR!

Wonder What They're Hearing In Russia? A Soviet DX'er Tells All.

BY IGOR SANNIKOV

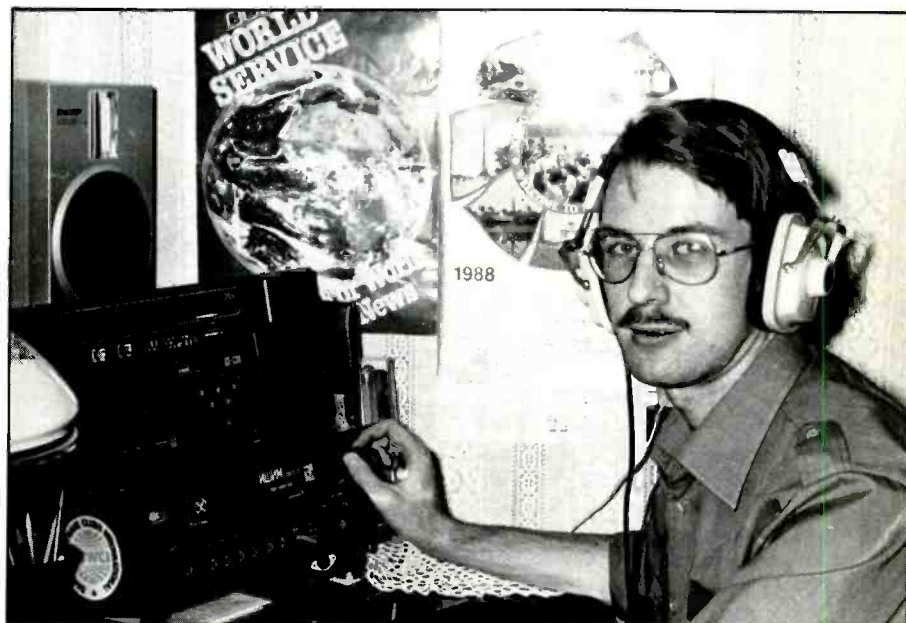
Editor's Note: Last month DX'er Sannikov described the types of stations operating within the USSR. In this, the conclusion of his 2-part story, he tells about listening to the world and the people are behind the DX'ing hobby in his homeland, the USSR. T.K.

DX'ing in the USSR, for a number of years, was significantly affected by the international political situation. After WWII, broadcasts from the CIA-backed station *Radio Liberty* began and were considered by the Soviet government to be psychological warfare. Thus, the broadcasts in Russian and other languages of the USSR from all Western stations were considered to be weapons in this warfare; hence the notorious jamming campaign. True, those programs were the main source of alternative information in past years. But now they need no more than to quote the many sensational appearing items in the Soviet mass media, and it looks like international broadcasting has all of the reasons to return to its primary aim, to inform listeners about the events taking place in the country of the broadcaster, rather than in the nation where the listener resides.

Unfortunately, after more than forty years, a stereotype of "Western radio voices" became firmly implanted in the minds of many people in the USSR. DX'ing hobbyists therefore have to stress that we aren't interested in the contents of the program, nor even the fact that they can be easily received here. Most Western broadcasts in Russian originate from very powerful transmitters located near our country's borders. Even the missionary stations KFBS/Saipan and KTWR/Guam come in clearly.

On the other hand, Russian broadcasts from the more friendly nations such as Romania, North Korea, Syria, Vietnam, etc., remain as if in the shadow of this stereotype. Although they can easily be heard, they are nearly unknown beyond the DX'ing hobby.

Another problem factor for DX'ers here is insufficient knowledge of foreign languages. Only one of the three most popular internationally spoken languages must be learned at secondary and higher schools (while optional courses are a rarity), and they aren't taught very well. So, most DX'ers may un-



The author tries for another new country. The receiver used is an Ishim 003-1, supplemented with a Panasonic RX-C36.

derstand some English or German, but they still have difficulty in writing reception reports in anything but Russian.

Postal Problem, Too

Because of the vagaries of the postal service, in most cases there isn't as much use in applying language skills for reception reports, anyway. Mail going to private individuals is OK, but with mail addressed to a broadcaster located (other than in a socialist state), the letter is apt to disappear without a trace. It doesn't differ from region to region, but in Lithuania it seems that there's nearly a 100% ability to send reception reports. In most other areas, most reception reports vanish enroute, even if, sent by Registered Mail.

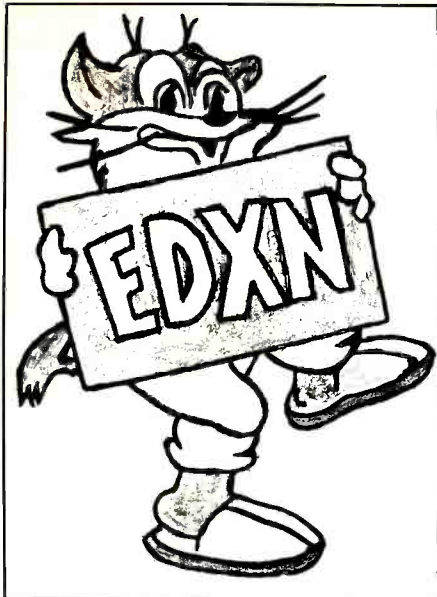
The most efficient way of dealing with this lies in appealing to the services of DX'ing friends in other nations. This is how QSL's have been received from nations which have no postal communications with the USSR, such as South Korea and South Africa.

Hopscotching The Bands For DX

If we examine what DX'ers in the USSR are hearing, we find that it's an extremely diverse assortment. Remember that Vladivostok is thousands of km away from Leningrad; Murmansk enjoys auroral propagation; Dushanbe is close to the tropics; this is very large nation. For now, we will deal only with a review of the DX pickings from the European portion of the USSR.

Many European mediumwave broadcasters are virtually local stations for us, even stations in Great Britain (including some pirates), and RDP in Portugal. Listening from the shores of the Baltic brings these in very well, but even here, near the Urals, West German regionals and the VOA are strong at night.

Still better conditions exist for reception of Middle and Near East stations, like Israel's Galei Zahal on 1287 kHz as well as stations in India and northern Africa. There seems to be nothing that's been impossible for our in-



Logo of the Soviet "Exotic DX News" Bulletin.

trepid DX'ers: Mikhail of Leningrad, and Stanislav of Nikolayev once logged CRLM on 1570 kHz, R. Vubracion in Venezuela on 1470 kHz, and Brazil's R. Globo on 1100 kHz!

VHF Broadcasts

FM and TV DX'ing is a highly specialized field with a limited following in the USSR. The most distant catch I know of has been Israeli TV. My own efforts with FM DX have been while mobiling in area much further east. Using an active antenna, my car radio picked up several Polish, Hungarian, and Romanian stations.

DX'ing foreign satellites has started recently here, and some hobbyists (such as one in Kaunas, Lithuania) have logged about sixteen satellites channels on receiving equipment imported from Poland.

Shortwaves

DX'ers find shortwaves to be their favorite bands. Fitting into the general category of "exotics" here are nearly all U.S. broadcasters, including KNLS and KYOI. Other favorites are R. Tanpa in Japan; the Burmese Army Station; R. New Zealand; R. Nacional do Brazil; and Euopirates in the 6 MHz band. The rarest DX stations to hear, and the most appreciated, are those that come through in the Tropical Bands because of the heavy "ute" activity the signals must battle.

Even a beginner can pick up some African stations in the evening. Indian and Pakistani stations aren't any problem, neither is R. Nepal. Chinese stations can even be heard before sunset. Latin American locals in the Tropical Bands are best monitored under the morning "gray line" in early fall. For some reasons I don't quite understand, I seem to have a direct pipeline to Brazil from

№ 1 (25) 1989.

ЭКЗОТИЧЕСКИЕ DX НОВОСТИ

EXOTIC DX NEWS

№ 1 (25) 1989.

The masthead of "Exotic DX News" as it appears on each issue.

my location, while Indonesia and the Pacific are far more difficult to pull in. Still, Leningrad DX'er Mikhail Timofeev managed to hear RRI stations even in the 120 m.b. So far as is known, the DX record for Tropical Bands listening also belongs to Mike with his reception of the Falklands/Malvinas and Vanuatu!

Clandestines, Etc.

The airwaves are filled with clandestines connected with the unrest in the Middle East, Iran and Afghanistan. "La Voz del CID" can also be heard if one listens in the early morning. Soviet DX'ers maintain a constantly updated Clandestine Stations Survey.

Stations sending out mysterious lists of numbers, especially those using English and German, are commonly heard. Once or twice I've heard them in Russian.

Soviet DX'ers don't specialize in "ute" station DX'ing, but I do frequently hear maritime communications in the Eastern Mediterranean, also time signals from WWV and BPM. Other DX'ers report hearing some European and African VOLMET transmissions.

The People Behind DX'ing

Considering the large size of the USSR, there are surprisingly few DX'ers. We should be the DX'ing "superpower," yet less than 100 names have been mentioned in various DX bulletins. There may be more who are strictly passive and don't contribute logging reports, but their number is unknown.

Those DX'ers known to me are in their 20's and 30's, plus many teenagers among the beginners. Geographically, these people are concentrated in the more populated European portion of the USSR. At least two are known to me in Central Asia. Areas especially rich in DX'ers include Moscow, Leningrad, the Ukraine, and the Baltic republics.

The Soviet DX Club was started two years ago. It (irregularly) issues the "World DX News" in Russian. Within the ranks of the SDXC, some members have formed a group known as the "DX-Circle Leningrad," which publishes "Exotic DX News," the most fascinating Soviet DX bulletin ever

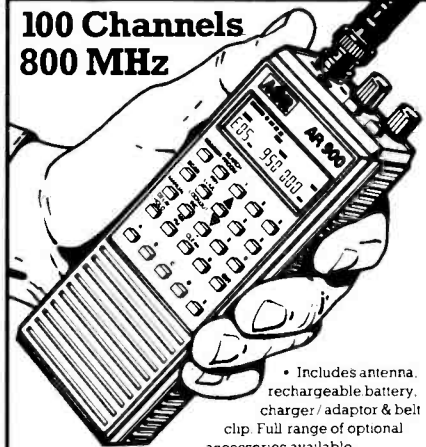
published. Its contributors are the top DX'ers from around the country.

In November of 1988, the first officially recognized club of Soviet DX'ers was founded in Lithuania. It's called "Banga" (The Wave) and was registered at the Foreign Service of R. Vilnius. The club produces English DX programs every two weeks for R. Vilnius, and also issues a monthly DX bulletin, a list of broadcasts in Esperanto, as well as "Radio Broadcasts via Satellite," DX tips, comments, and suggestions may be sent to: Lietuvos DX Klubas "Banga," Lietuvos Radijas Laidu Uzsienui Redakcija, 232 674 Vilnius, USSR.

Letters sent to me personally are also welcome, and may be addressed as follows: Igor Sannikov, ul. Oparina 6, kv. 37, Novovratsk, Kirov obl., 613015, USSR. **PC**

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AGA3HQ Leads The Way

New Super-Deluxe Communications Station On The Air!

BY MSgt NORMAN V. WHITTLE
OPERATIONS TECHNICAL ADVISOR
AIRLIFT COMMUNICATIONS DIVISION, SCOTT AFB

The Scott AFB Military Affiliate Radio System station in Illinois is now a state-of-the-art radio station. For more than 20 years, the Scott station, always a key station within the MARS system, employed manually tuned vacuum tube, SSB HF transceivers. These older radios had limited flexibility in meeting changing mission profiles. In their time, these radios were the backbone of the worldwide radio system, but in this day and age, tube radios present both operational and maintenance problems.

New Equipment

In the 1979-80 time frame, a new program called Pacer Bounce was initiated as a replacement/standardization effort for low power (under 1 kW RF output) Air Force radio transceivers. Pacer Bounce equipment would replace the aging Collins KWM-2A,

KWT-6, 30L-1, 30S-1, and 180S-1 equipment groups. Now, Pacer Bounce radios nomenclatured the AN/URC-119, are in place and offering new operational capabilities for Air Force radio stations.

The AN/URC-119 operates from 1.6 to 30 MHz. Some of the old equipment had serious tuning range limitations, such as not tuning below 3.4 MHz or between 5 and 6.5 MHz. This proved to be a major limitation when operating over short and medium range paths, particularly during its use in Southeast Asia.

The KWM-2A, the most commonly used tube transceiver, was rapidly becoming unsupportable logistically. The once-tight mechanical tuning mechanisms were starting to get sloppy after thousands of hours of use over the years. Replacement tubes and special components were becoming difficult to obtain. It was time to replace the old radios.

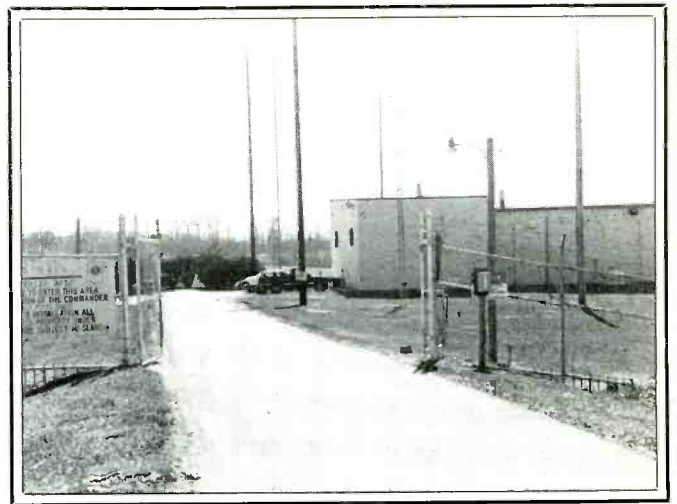
With considerable interest and effort by the 1974th Communications Group and their parent organization, the Airlift Communications Division (both located at Scott Air Force Base), new AN/URC-119 radios made by the Harris Corporation, RF Communications Group, were obtained through the Pacer Bounce program.

The 1974th launched a concentrated self-help effort to modernize the Scott MARS station, the hub of the U.S. Air Force MARS system. A new oak operating console was designed and installed, a new environmentally controlled equipment room was constructed, new AN/URC-119 equipment was installed, and checked out, and the station went operational. The Scott AFB station is the Master Net Control Station for the U.S. Air Force MARS Transcontinental Traffic Net. It also performs other major MARS responsibilities such as world-wide



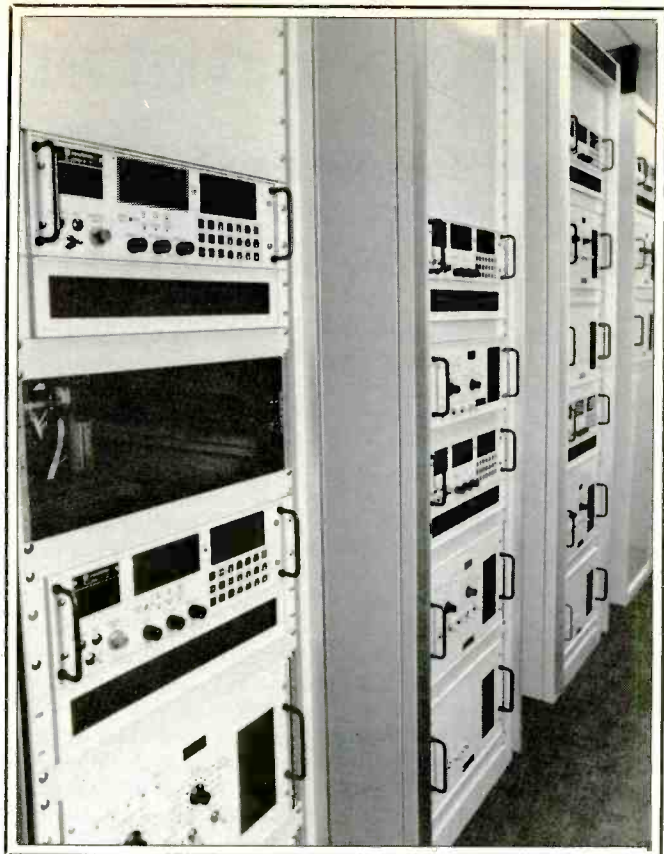
Exterior view of U.S. Air Force Military Affiliate Radio Station, Scott AFB, Ill. (U.S. Air Force photo by Sgt. Ron Reed)

Exterior view of U.S. Air Force Military Affiliate Radio Station, Scott AFB, Ill. (U.S. Air Force photo by Sgt. Ron Reed)

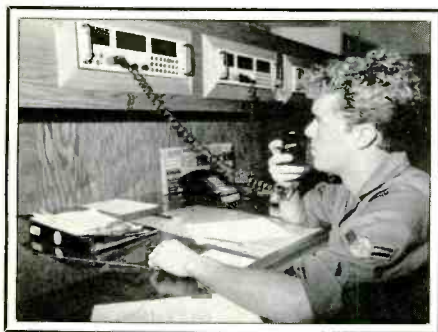




MSgt. Richard Collier and Sgt. Cindy Obermier demonstrate how the back-up radios in the equipment operate. (U.S. Air Force photo by Sgt. Ron Reed)



The equipment room contains Harris radios and linears (power amplifiers). The equipment is located in a separate climate controlled room adjacent to the radio positions. (U.S. Air Force photo by Sgt. Ron Reed)



AIC David Japke talking on the radio at one of the seven remote positions recently installed. (U.S. Air Force photo by Sgt. Ron Reed)



Three operators. AIC David Japke, AIC Fonda Briskey and Sgt. Cindy Obermier, work three of the seven remote radio positions. The new table has three sides that forms a "C" shape, allowing easy access to all positions. (U.S. Air Force photo by Sgt. Ron Reed)

emergency, contingency, and morale and welfare communications. There are now seven Pacer Bounce equipment packages installed at Scott AFB to perform these functions.

Improved Operational Capability

The new equipment console in the operations room has three functional operating positions, but the Pacer Bounce radio equipment is not installed in the console itself. It is located in the equipment room,

connected by remote control equipment mounted in the operating positions. This makes for an extremely effective operating environment.

Until recently, the Scott AFB MARS station operation was on SSB voice only. However, another radioposition was established for packet radio. The packet position operates on HF and also VHF frequencies in a dedicated network that will eventually

include all major Air Force MARS installations world-wide. Quick, efficient, and error-free communications between these stations will augment the MARS system capabilities into the next century.

Scott MARS Leading The Way

With the advent of Pacer Bounce radio equipment at the Master Net Control Station, the Air Force MARS program has taken a major step toward bringing the MARS system in sync with current technology. The Pacer Bounce radios at Scott provide the worldwide MARS radio system control station with operational, highly reliable, and easily maintainable state-of-the-art HF radios. Most other MARS stations are also trading in their tube-type HF radios for Pacer Bounce radios. Within months, virtually all Air Force MARS stations will be using Pacer Bounce radios.

The MARS callsigns at Scott AFB include: AGA3AE, AGA3AF, AFA3C, AGA3CS, AGA3D, AGA3HQ, AGA3SC, and AGA3SZ.

The enhanced operational capability afforded by this new radio equipment will result in a vast improvement in MARS mission performance—providing emergency, contingency, and morale communications support for the U.S. Air Force throughout key areas of the free world.

PC

Pop'Comm Product File:

RF Limited's D-505 and D-707 Super Wide Band Receiving Antennas

Modern radio receivers fall into roughly three categories, each divided by a "band" or several bands of frequencies. "Low" band receivers cover roughly 10-500 kHz. "Medium" band receivers sometimes known as "HF" (high frequency) band receivers, may cover 500 kHz to 30 MHz, the well-known "shortwave" portion of the spectrum. Finally, VHF (very high frequency) bands cover 30-300 MHz and UHF (ultra high frequency) bands cover 300 MHz to 1 GHz.

Each band of frequencies normally requires a different antenna. Low and medium frequency bands require a large, outdoor antenna for optimal receiver "performance". High frequency bands also require a large outdoor, often directional or "beam" antenna to receive distant DX stations. The situation of VHF and UHF bands is somewhat different due to the nature of radio signals. Signals on the lower bands travel by

"skipping" over the earth's outer atmospheric layer, the ionosphere, which refracts and reflects the signals, diverting them to distant lands like a giant mirror in the sky.

By contrast, VHF and UHF signals travel by "line-of-sight" without being refracted or reflected, so that much shorter point-to-point distances are traveled. Antennas for these bands of frequencies can be much smaller than antennas for low and medium frequency bands because at higher frequencies the wavelengths are shorter. Such VHF/UHF antennas also are often more convenient to buy, build and install.

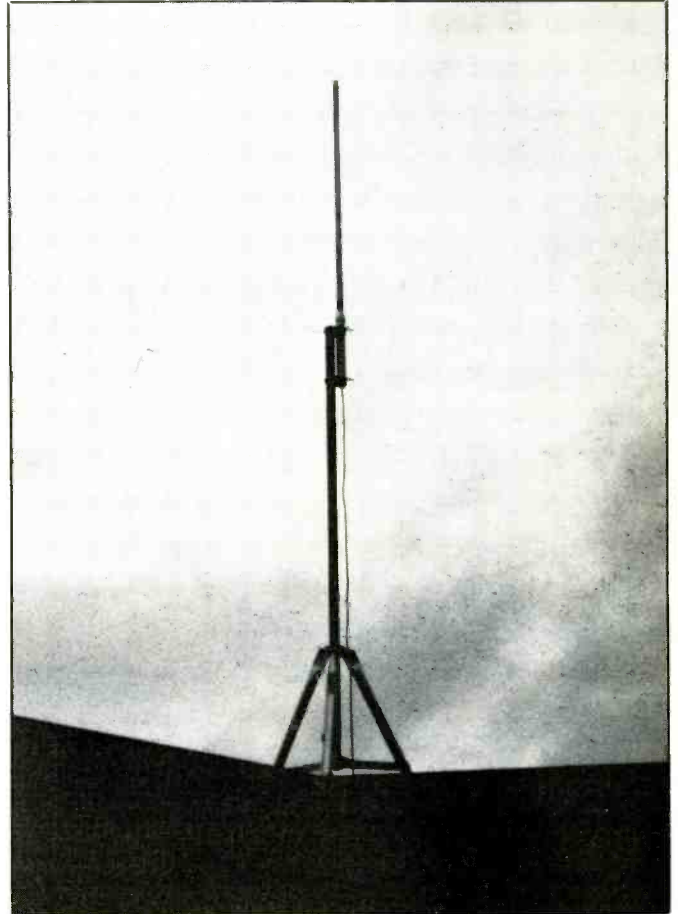
Until satellites were placed in the heavens, broadcasting on VHF and UHF bands was undertaken only by television and FM stations occupying certain discrete government regulated portions of the huge radio spectrum. The remaining VHF and UHF frequencies were assigned to military and government stations, local fire, police and

other, most having fixed and mobile transmitting and receiving stations. For these bands, smaller mobile antennas can be reasonably efficient.

In addition to LF, HF, VHF and UHF bands, the radio spectrum has recently been widened by satellites into the SHF (super high frequency) range from about 1 GHz (1,000 MHz) to many GHz. Beyond this is radar, not a practical frequency for typical listeners, except in radar detectors.

A Listeners' Dilemma

Shortwave listening has always accompanied the popularity of radio broadcasting. Thousands of global stations broadcast information, entertainment and propaganda around the clock. For optimal signal reception, shortwave bands typically require large antennas located out-of-doors, preferably high and in the clear. Such antennas



D-505/707	D-505	D-505C	D-707	D-707C
Frequency	500kHz-1500MHz	500kHz-1500MHz	500kHz-1500MHz	500kHz-1500MHz
Gain	20dB(Max.)	20dB(Max.)	20dB(Max.)	20dB(Max.)
Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Length	74cm(29.1")	74cm(29.1")	95cm(37.4")	95cm(37.4")
Weight	160g(0.35lbs.)	160g(0.35lbs.)(w/o cable)	1kg(2.2 lbs.)	1kg(2.2lbs.)(w/o cable)
Connector	UHF male	UHF male	UHF male	UHF male
Gain Controller	attached	attached	attached	attached
AC Adapter	—	—	attached	attached
Cross-Family Adapters	—	SO-239-BNC	—	SO-239-BNC
Coaxial Cable(RG58U)	—	5m w/trunk lid base	—	15m

are obviously impractical for most listening enthusiasts.

Antenna size is directly dependent upon the frequency and wavelength of the transmitted and received radio signals. Many VHF and UHF bands are best accessed by large, outdoor multi-element "gain" antennas which are typically television antennas often seen sprouting from rooftops. However, again these antennas are rather impractical for listeners confined to apartments, townhouses and office buildings. Shortwave radios, often small, portable tabletop types, have been equipped with "whip" antennas mounted directly on the radios. Although convenient and functional, such antennas have serious drawbacks: they are usually too small, limited and confined within steel and concrete buildings to be effective receptors of radio energy.

Since small antennas tend to yield only weak signals to the receiver, radio manufacturers have increased the "gain" by electrically amplifying circuits within the receiver. Unfortunately, this is not a completely satisfactory solution because signals of different frequencies coming from different locations always arrive at different strengths—so that amplification for one signal may not even be necessary for another signal. As a result, radios linked to small "whip" antennas often over-amplify signals, causing distortion and interference, or under-amplify signals, causing poor reception.

Apart from broadcast listeners, a distinct listener group has grown up with the technology of VHF—UHF—SHF radio. These listeners can now hear and monitor myriads of frequencies including aircraft, marine, government, military, utilities, law enforcement, surveillance and many others.

To satisfy these listeners, "scanner" type receivers electronically "tune" up and down the radio spectrum until a signal is detected. The scanner receiver then "locks" onto the signal, remaining there until the transmission is finished. This enables scanner listeners to be entertained by all types of private communications.

Even though smaller antennas are sufficient to receive these higher frequencies, scanner listeners still face a major problem. Chiefly due to their line-of-sight nature, such VHF, UHF and SHF frequencies are even more difficult to receive than shortwave frequencies. Furthermore, transmit-

ters of these frequencies are usually far less powerful than are used on broadcast and shortwave bands. Often, and sometimes exclusively, they are mobile stations.

Listeners have usually been forced to assemble an assortment of large, small and directive antennas to cover the desired radio frequency spectrum. Except for a few fortunate listeners with optimal receiving locations on generous land areas, most listeners simply can't place these unwieldy antennas in an advantageous receiving position.

In view of these problems, it had been difficult for a radio listener to find a single adequate antenna to receive the shortwave frequency spectrum plus VHF, UHF and SHF bands. In other words, no one antenna had been available to listening enthusiasts to suitably access the entire radio spectrum.

In late 1987 RF Limited of Issaquah, Washington gave several difficult objectives to Japan's Diamond Antenna Corporation. The first objective was to design an antenna with the greatest possible frequency bandwidth because, RF Limited was convinced that a significant number of SWL receiving and scanning enthusiasts around the world wanted an all frequency encompassing "active" antenna.

The "active" wideband antenna is so named because it contains electronic circuits formerly found only in the radio itself. The active antenna controls the amount of amplification or "gain" exactly as needed without the usual accompanying problem of distortion. An active antenna selectively amplifies weak, distant signals but not strong, local signals.

With just one active antenna instead of several different passive ones, several receivers of different frequency bands could be connected and thus enable the listener to access the entire radio spectrum. Therefore a major benefit to the listener would be the ability to scan up and down the radio spectrum without interruption or loss of signal quality by simply switching between receivers.

As a second objective, RF Limited wanted this antenna to develop the highest possible gain, yet possess a low noise figure, high efficiency and high sensitivity. This was difficult, since one tends to cancel out the other. With existing wideband antennas, gain had always been sacrificed to achieve a wider frequency range. RF Limited also wanted

this gain or amplification to be variable so that the listener could fine tune and reach the optimal signal strength without encountering distortion.

Diamond responded to these challenges with the models "D-505 Mobile Whip" and "D-707 Base Station Super Wide Band Antennas", the first in the world marketplace at under \$200 to cover the entire radio frequency spectrum, from 500 kHz to 1.5 GHz and to develop gain.

To achieve this, both antennas employ a unique construction wherein a custom RF Hybrid IC amplifier is housed in the base of the antennas' 30 inch long element. This amplifier is then protected from electrostatic discharge, shorted coaxial cable, reverse polarity and overvoltage through a unique fold-back protection circuit.

The resulting gain is variable from 0 to 20dB making the RF amplifier immune to front end overload. The noise figure is an impressive 1-2dB over the entire operating frequency. Gain is adjustable via a remote controller which may be conveniently placed next to the receiver. This controller also houses the power supply. Operating voltage is 13.8 V.D.C. which is fed to the controller and in turn feeds the pre-amp located in the antenna's base. The voltage is fed via the same coaxial cable that is used for lead-in between the antenna's base and the receiver.

Electrical characteristics of both antennas are exactly identical. The D-505 comes with mobile whip element, gain controller and 13.8 volt DC cigarette lighter power cord. Optional is a trunklid mount with 16 feet of coaxial cable and an SO-239 to BNC connector adapter to fit BNC style antenna jacks: The D-707 is designed for base station installation and comes with extruded aluminum brackets and hardware to mount to a pipe or mast as well as a 13.8 volt DC wall adapter. Optional is 50 feet of coaxial cable to connect the antenna and receiver. The D-707 is housed in a fiberglass composite radome for all-weather protection. All hardware is either triple chrome plated brass or stainless steel.

By combining such an array of high performance features, the winners will be radio scanner listening enthusiasts.

This information based upon data supplied by the manufacturer.

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

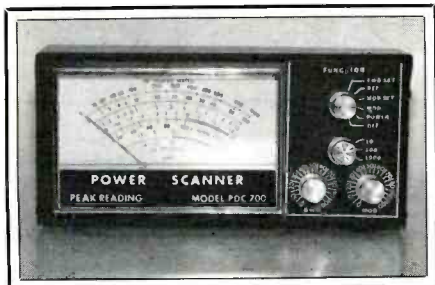


New Compact FM Transceivers

Fifty watts. Twenty memory channels. New DTMF microphone with control functions. Remote control head accessory. Bright amber LCD display. Extended 2 meter frequency coverage (136 - 174 MHz receive) for MARS and CAP. Modifiable transmit range (permits required for modification information.) Very affordable. This is the all new Kenwood TM-231A 2 meter FM transceiver. There are other models available for other bands, too! TM-431A for 450 MHz (35 watts), TM-531A for 1200 MHz (10 watts), and the 25 watt TM-331A for 220 MHz!

These new transceivers also have lots of new features worth noting. Like the optional digital voice recorder. New multi-function microphone that allows you to not only TouchTone with 16 keys, *but also control the radio!* Another unique option is the RC-20 remote controller—a full-function control head that controls power on/off as well as all front panel functions. The RC-20 is not a handset like the RC-10; it is a control head, which can be connected to up to four transceivers with the IC-20 option. See your Authorized Kenwood Amateur Radio Dealer for more details!

For more information contact Kenwood U.S.A. Corp., 2201 E. Dominguez St., Long Beach, CA 90810, or circle 102 on our Readers Service.



RF Power Scanner

Para Dynamics power scanners have become the recognized standards of quality in the consumer electronics market. All PDC Scanners are easy to install (requiring only two coax connectors, and can be left

in-line operation for full time monitoring or these output functions.

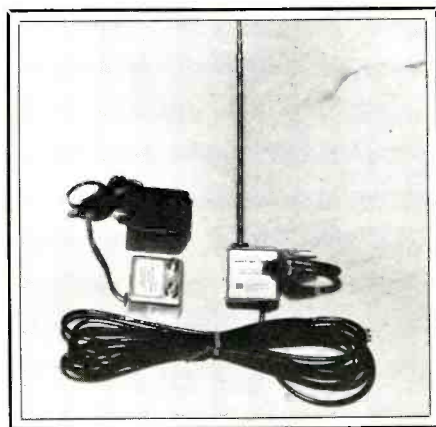
Power. Output RF power is read from any one of the three power reading scales: 0-10, 0-100, 0-1000 watts. The power scales are independently calibrated and factory set at 27 MHz. Each of the three scales can be recalibrated to a different frequency, creating three watt meters in one.

Modulation. The voice level output is indicated on the extremely sensitive modulation meter. Ideal modulation would be 100%. An operator can make compensations in voice level, microphone position, mike gain, or add modulation boosters to achieve more effective talk power.

Standing Wave Ratio. SWR is the ratio of maximum to minimum current along the coaxial line. An SWR of 1 to 1 is a perfect impedance match and results in all the power output of the transmitter being radiated as a good signal. Poor impedance match can cause permanent damage to a transceiver.

PDC. Scanners with SWR meters enables the fine trimming of antenna systems plus continuous monitoring of the SWR to detect changes due to leaks, oxidations and weather conditions.

The PDC 700 uses a large 4" x 6" 50 Micro Amp Meter movement which is ideal for bench use. For further info: Para Dynamics, 132 N. Main, Union, Ohio 45322, 513-836-0594.



SUPER VAK-TENNA Now Mast Mounted

Electron Processing, Inc. announced that their premium active receive antenna, the SUPER VAK-TENNA is now available for both mast as well as suction cup mounting. Now those who have outdoor antenna masts can benefit from the high performance of this antenna. Coverage of all frequencies between 0.5 and 800 MHz with moderate performance up to 1.5 GHz. An internal 14 DB SIGNAL INTENSIFIER as-

ures the strongest signals possible at all times.

The new SUPER VAK-TENNA-MM mounts to any mast up to 1.75" in diameter by means of a rugged clamp. Wind loading is minimal and the telescoping whip of the antenna extends to 38" yet collapses to only 14". A full 15 feet of coax cable is provided between the antenna and the remote power unit to aid in installation. The antenna is powered by 110 VAC and provides a female BNC jack for receiver connection. DC and 200 volt European power sources are now also available.

Pricing starts at \$149.95 with quantity discounts available. Accessories include a 50' extension cable (\$20) and additional mounting adapters for various situations. To order or for additional information, contact the Sales Department, Electron Processing, Inc. at P.O. Box 708, Medford, NY 11763 or call (516) 764-9798. More information, too, by marking 103 on our Readers Service.



2-Meter Micro-Sized Handheld

ICOM announced the IC-2SA two-meter micro-sized handheld transceiver. The multi-function IC-2SA fits in the palm of your hand, yet packs the most requested features.

Five Watt Power Output. The IC-2SA utilizes a specially designed ultra-small, highly efficient power module. Pull in those distant repeaters!

48 Memory Channels. 48 fully-programmable memory channels and one call channel.

Unique Power Saver Function With High Speed Switching. Saves power during standby, allowing extended operating time.

Multi-Scanning Function. VFO Scan repeatedly scans all VFO frequencies. Memory scan repeatedly scans all pre-programmed memory channels.

Auto Power Off Timer Function. If you forget to turn your IC-2SA off, it will turn itself off saving battery power.

Priority Watch. Monitors a specified station every five seconds while you operate on a VFO frequency.

Built-In Clock With Timer Function.

Dial Select Function. The 100 kHz, 1 MHz or 10 MHz digits can be changed via the tuning control.

Simple Operation. Is insured with a total of just 9 controls. A handy reference chart is located on the back of the radio.

Additional fine features include: Pause and Timer functions during scanning, a tone squelch function, and a newly developed memory masking function which allows you to mask out seldom used memory channels temporarily. Also, an optional paging and code squelch function allows you to receive signals only from stations you wish to hear.

Suggested retail price is \$419.00. For more info, contact ICOM America, Inc., P.O. Box C-90029, Bellevue, WA 98009-9029, or circle 101 on our Readers Service.



Manpack Selcall

A selective calling unit, specifically designed for use with HF-SSB manpack radios, has been announced by Trans World Communications, Inc., a subsidiary of Datron Systems Inc.

The new unit, model "PRC-SELCALL", is designed as a simple add-on unit for existing HF-SSB manpack radios. Normal connection is through the radio's audio connector. The system utilizes a high-speed digital signalling format with up to 256 individual calling codes as well as an "All Call" feature. Also included is a "transpond" facility to automatically acknowledge receipt of incoming calls.

The unit is mounted in a ruggedized waterproof case and is designed to be fastened to a belt for convenient operation. Controls and indicators are provided for selection of

the code of the station being called, call initiate, call receipt, and PTT. An audible "call alarm" is also provided in the radio's handset.

Though primarily designed for use with Trans World's PRC1099 HF-SSB manpack radio operating in its channel scanning mode, the PRC-SELCALL unit is plug-compatible with other standard HF, VHF

and UHF manpacks using six pin U.S. military connectors. Special connectors can also be fitted for use with other radios.

For further information contact: Robert LaRose, Marketing Manager, Trans World Communications, 304 Enterprise St., Escondido, CA 92025, or circle 104 on our Readers Service.

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SATISFACTION GUARANTEED

The World In A Suitcase

How The Secretary of Defense Hooks Into Worldwide Comms Nets In An Instant.

By R.L. SLATTERY, KAZ7JS



TSgt. Carol J. Wickham, of MSC, operates a portable satellite communications system. (U.S. Air Force photo)

When Secretary of Defense Carlucci travels outside Washington, DC, on business, his travel companions include a Mobile Secure Communications team from the Air Force 7th Communication Group.

MSC members provide mobile secure communications for the Secretary 24 hours per day. Though they are enlisted service numbers, they usually ride in the same aircraft, stay in the same hotels, and even attend the same functions as top-level defense officials. These communicators must be prepared to contact the White House, the Pentagon, and other levels of command at any time.

MSC teams also support the deputy secretary of defense and the chairman and vice chairman of the joint chiefs of staff. They wear civilian attire when traveling with civilian officials, and uniforms when traveling with the generals; however, their work for each is the same.

An MSC mission begins when team members submit passports for visas to countries on an official's itinerary. Immunization requirements are checked as is any equipment that may be needed.

A typical mission requires two computers, two or three UHF radios and two facsimile machines, according to CMSgt Bill Hollowsky, who is the chief of MSC. Encryption devices are bought along for classified communications. A radio with the accompanying encryption device can fit inside an average briefcase.

Several hours before take-off, MSC people load their communications equipment aboard the departing aircraft. If the aircraft does not have secure on-board communications, the MSC will operate secure equipment during the flight. Voice, data and facsimile communications are all available to officials while in the air or on the ground.

If MSC equipment should break, there

are usually backup systems to replace it in a timely manner, Chief Hollowsky said. If not, team members are qualified to fix it themselves.

Upon reaching a destination, the team sets up a base station and ensures communication with the Pentagon. The base station operates round-the-clock until just prior to departure, when it is loaded for travel. If defense officials stray far from a base station, MSC members accompany them with portable communications equipment.

While MSC duty requires communicators to leave home approximately 50 days per year, it has its benefits.

"We travel all over the world and see different cultures," Chief Hollowsky said. "We've been to China, Yugoslavia and Rumania."

"It is also satisfying to work with high level DOD officials and know how your job is very important for national security," he added.

Policeman Saves Boss' Daughter From Smoky Fire

Phoenix Police Officer Frank Pina had been patrolling his new beat for only two weeks when he received a call to check out a 911 emergency call. Little did the five-year police veteran know that he would pull the daughter of a police supervisor from a burning building minutes later.

Police operators received a 911 call from a home with no one on the line, so they dispatched Pina to investigate. When Pina pulled up in front of the two-story house, he couldn't see anything unusual, but sensed something was wrong, according to an account of the incident in the *Phoenix Tribune*.

"The car was in the driveway and the door was unlocked," Pina told the *Tribune*. "I figured someone had to be home." Pina had the dispatcher call the house, and he could hear the phone ringing but couldn't hear anyone answering.

Pina then tried to open the door. "I threw it open and that's when I saw the smoke," he said. Pina told his dispatcher to call the fire department, and then headed inside on his own.

The policeman recalled his training as he crawled into the smoke-filled house. "Every time I went in, I tried to hold my breath," Pina said.

He went one way in the house, then came out for air. He went into the house again, checking another area. The third time Pina entered the house, he decided to search the second floor despite the thick black smoke.

"I could barely see the stairs," Pina said. "I did not want to go up there, it looked scary."

Pina made his way to the first landing when he saw what looked like a pile of rags. When he got closer, he recognized that it was a person.

Carie Ausustyn, 17, had come home from classes at Arizona State University when she heard the second floor fire alarm. She went upstairs, found the bathroom in flames, and called 911. She later said the phone didn't work and was about to get out of the house when she passed out from the smoke.

After Pina found Augustyn passed out on the floor, he grabbed her legs and backed out of the burning house, dragging her into the front yard. Once outside, Augustyn regained consciousness.

"Her eyes opened slowly," Pina told the *Tribune*. "I asked her if she was OK." When Augustyn told Pina her name, Pina knew

SCAN PUBLIC SERVICE AWARD

immediately that she was the lieutenant's daughter.

Both Augustyn and Pina were treated for smoke inhalation and released from area hospitals. The fire was started by a curling iron in the second-floor bathroom. The heat from the fire melted a water pipe and the leak extinguished the fire before firefighters arrived.

Pina said that he was glad he was able to rescue the lieutenant's daughter. He also said that he wasn't eager to be a hero again, but if he had to do it over again, he would.

For his actions Phoenix Police Officer Frank Pina will receive the SCAN Public Service Award, which consists of a commendation plaque and cash prize. For making the nomination, Roger J. Holappa of Mesa, Arizona, will also receive a plaque. Congratulations to both of you.

Best Appearing

Elliott Rodriguez of Puerto Real, Puerto Rico, is an amateur radio operator (WP4FVQ) who also enjoys scanning. This attractive shack features a Realistic DX-400 scanner, Realistic PRO-2001 scanner, portable Regency MX-1500 (not pictured), Motorola UHF receiver, Rhapsody shortwave multi-band rig and a Cobra 2000-GTL.

A Commodore 64 computer, Avanti PDL-II antenna and three dipole aerials complete the equipment list. Elliot mentions that he has more than 500 QSLs, mostly



SCAN PHOTO CONTEST WINNERS

from stations in the Americas. He is also a part-time disc jockey on a 50,000-watt FM station in San Juan.

Best Equipped

Samuel Rubin is an 83-year-old retired electrical engineer who has been an active scanner enthusiast for many years. He used to be an amateur, but had to give that up because his job kept him travelling around the country. That was in 1927, by the way!

Today, Samuel uses a Bearcat 300 scanner, Heathkit GR-110 scanning monitor, Zenith Transoceanic shortwave receiver, and a Panasonic wireless remote recorder activated by sound along with a scanner recorder adapter. A Tesla coil and Verichron world clock and Optoelectronics frequency



counter are also used. Samuel measures the frequencies of police, fire, aircraft, taxi and car telephone transmissions with the counter.

Not shown here is an IBM Personal System 2 computer with a laser printer. Samuel uses this for a newsletter he publishes for the 500 people who live in his apartment building. Naturally, some of what he hears on his scanner makes it into this newsletter.

Samuel receives at least a dozen communications, video and computer magazines, but he likes *POP'COMM* best because he says it has been a special guide to what is going on in the field of communications.

27 MHz COMMUNICATIONS ACTIVITIES

Midland International's Model 75-790 is a 40-channel 5-watt hand-held transceiver that's suited to on-the-go operations requiring more comms than can be found in the hand portables. As you may know, all too many "CB walkie talkies" are little more than toys and, in fact, operate on 49 MHz and aren't even compatible with CB base and mobile equipment. This one is different.

The Midland 75-790 does operate on 27 MHz. Also, it has a dual conversion receiver, high (5 watt) and low (1 watt) transmitter output switch, an automatic noise limiter, instant Channel 9, separate LED's for transmit and receive, and an analog meter to read out incoming signal strength, transmitter power, and battery condition.

This unit operates on 12 to 15 VDC. A charger jack or rechargeable batteries, and a vinyl carrying case are included in the MSRP of \$149.95. A rig like this is excellent for campers, boaters, hikers, industrial uses, and emergency applications.

For further information, contact Midland International, Consumer Products Division, 1690 N. Topping, Kansas City, MO 64120, or circle 105 on our Readers' Service.

With respect to hand-held transceivers, C. A. Luse of LaMesa, CA wrote to ask if we knew why there were no AM/SSB hand-held transceivers available for CB use. We used to think it was because the complexity of the circuitry prohibited making a AM/SSB unit small and light enough to be used as a hand-held. What with the popularity of IC's, this no longer seems like a reasonable explanation. We can only guess, then, that right now manufacturers do not see sufficient user demand for an AM/SSB hand-held transceiver to warrant producing any. Traditionally, Sidebanders on 27 MHz have been communications hobbyists. Conversely, hand-helds have never been popular with hobbyists. Maybe it's as simple as that.

From The Readers

Grant Maxwell, 5 Albion Street, Nanaimo, BC, Canada V9R-1R4 would like to hear from readers who have had any experience cophasing two Antenna Specialists Super Scanner base station antennas. If so, he'd like to know how it was accomplished, and what kind of results were obtained. Although I can't say that I have, myself, ever tried running two in tandem, I have used one by itself. While it's a good single antenna, its rather unique design doesn't seem to me to make it a candidate for cophasing.

On the subject of antennas, D. Shock, Springdale, PA writes that he has seen many mobile CB installations with the antenna to the side of the trunk lid. Since the



Midland's Model 75-790 portable CB is a rather sophisticated unit.

middle of the trunk lid would seem to offer a better radiation pattern, he wonders if the main reason for the off-center mounting is just to prevent the antenna from hitting the rear window when the trunk lid is raised. That might have something to do with it, but we'd say that it's probably because of the popularity of screw-on mounts made for the edges of the trunk lids that go on quickly and don't require drilling into the vehicle.

Mr. Shock also asks if there is any way of lowering the SWR of a mobile antenna installation other than antenna placement, a tuner or matcher, antenna length, or cable length. There may very well be some other methods, although they aren't in general use. If a mobile installation is showing more than a 2:1 SWR and it can't be lowered by any of the basic methods mentioned, then that's really about the best you can expect to achieve.

Frank, of Marysville, CA passed along two photos of his very efficient looking base station. From desk top to roof top, it looks about as sophisticated as they come. Heart of the station is a Cobra 2000-GTL, while up on the roof is a size 6 "Rake" plus other delights. Chances are that Frank doesn't have that much trouble reaching across town with this station!

Another great photo arrived from Steve, who hails from Quincy, IL. He's another devotee of the Cobra 2000-GTL rig. He wishes that all who say they'll QSL would actually do so, or else not make the claim. Say's he sent out far more QSL's than he's ever gotten in return. We can only add two thoughts. First, we have the same com-



Frank Miranda, Marysville, CA operates this beautiful station.



Frank Miranda's roof has a Moonraker 6, an Astron 99, an A/S M-344, and a Realistic scanner GP.

plaint. Secondly, people probably tell Steve he looks like Jon Voight.

Unit 102, of Battle Creek, MI wishes to remain anonymous but takes issue with the fact that this column doesn't devote more space to outbanding operations on unauthorized frequencies above 27.415 MHz. He quotes us as once having commented that there isn't much interest in those frequencies. That isn't quite accurate. You need only to tune across the 27.415 to 27.995 MHz band to realize that there's obviously activity and interest there, and we have never claimed otherwise. What we did say was that, based upon the steady flow of mail this column receives, it doesn't appear that very many of our readers are interested in reading about the topic in this column.

Gerry Gaudette, 314 Moffat St., Orilla, Ontario, Canada L3V-4G1 has a Browning Mark IV-A with a problem. It appears that the EPROM needs replacing, and although Gerry has tried many sources in Canada, what he needs hasn't been available. If any of our readers can be of help, please contact Gerry at the address given.

CB Ken's Electronic Parts, 2825 Lake



This is Steve, of Quincy, IL seated at the Cobra 2000-GTL. Why not send us a photo of yourself and your 27 MHz station?



Operating position at Unit 102 in Michigan shows an extensive array of equipment.

Street, Kalamazoo, MI 49001 has been mentioned here before as an excellent source of parts for Cobra, Courier, Gemtronics, GE, Hygain, Johnson, Kraco, Kris, Lafayette, Midland, Pace, Pearce Simpson, President, RCA, Realistic, Robyn, Teaberry and numerous lesser known brands of CB's from earlier years. Ken advises that those seeking parts would save lots of time if, instead of writing, they called him (no collect calls, please) at (616) 345-4609. Best time to call is Monday through Friday between 9 a.m. and Noon Eastern. Ken says that letter inquiries often don't contain enough specific information on what they require and that only serves to slow down the entire process of satisfying the needs of his customers.

Do You Believe This


Archie Hawley, of Unity React #2947, in Illinois sent along something that was an eye opener. This was a copy of Illinois State House Bill 0376 (86th General Assembly, 1989-1990), introduced March 1 by Representative Shaw.

The proposed Illinois legislation would require a person who owns, rents, leases, or used a paging device (*beeper*), or a CB radio to obtain a license for such a device from the Department of Revenue and pay a \$5 yearly license fee. The law wouldn't apply to non-residents, but residents caught with "unlicensed" CB's or beepers would be guilty of a "petty offense." Second offenders or worse would be guilty of a "business offense," should the law be enacted. Police officers would not be permitted to stop a vehicle solely on the basis of a suspected violation of this law.

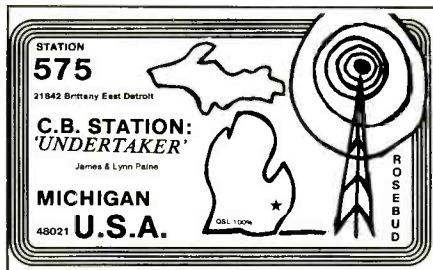
Off hand, it strikes me that a state would be running afoul of federal laws if it attempted to begin issuing its own rinky dink licenses to CB radios. This represents a new low in attempting to gouge the public, so far as we are concerned. It's just plain sick, and probably wouldn't stand up in court if challenged.

QSL Department

Our overseas QSL Of The Month comes from the Faroe Islands, a rare location in

	QSL FROM 1 F. I. 1 <i>Delaney</i> TO RADIO # 300 <i>Amberley</i> CONFIRMING OUR QSO
	DATE 2/10 TIME 13:20 MHZ S R AM <input type="checkbox"/> LSB <input type="checkbox"/> USB <input type="checkbox"/> QRM <input type="checkbox"/> QRN <input type="checkbox"/> QSB <input type="checkbox"/>
RX TX: <i>Summerbury 15 780 dx</i> PSE QSL <input type="checkbox"/> MIC: <i>Hosiden Amplified</i> TNX QSL <input checked="" type="checkbox"/> ANT: <i>GP 1/2 wave</i> 73 & 51 GOOD DX	

When was the last time you saw a CB QSL from the Faroe Islands?



Big and bright are the two key words for this QSL from Jim Payne in Michigan. A card he's proud to send out.

anybody's book. The card is from station 1-FI-1, and was shared with us by Marshall Cubitt, Smith Falls, Ontario, who is into card swapping.

Two other cards to share with you this month are from Steve Steffen, SSB Network member SSB-7331A (also ham KA0TLZ) of Dubuque, IA, who monitors the upper side of Channel 37. The other card is large and printed in red and black on bright yellow card stock. It came from Jim Paine, the *Undertaker*, of East Detroit, MI. Can't miss that gaudy card on our wall!

Fluorescent Buzz

Due to the nature of operation, fluorescent lamps produce a buzz-type interference that may be picked up by a CB receiver. An important remedy is to locate the receiver at least four feet away from the fluorescent lamps. This reduces the pickup of noise energy radiated from the glass lamp. But, a

They're here . . . CQ Amateur Radio 1989 Equipment Buyer's Guide and 1989 Antenna Buyer's Guide

Which one is right for you? The **Equipment Buyer's Guide** gives you the edge in selecting just the right equipment for the shack—HF and VHF rigs of all kinds, accessories, packet controllers and so much more. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. Buy with confidence when you make your decisions based on all the facts.

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Both guides have **buying tips from the experts**. How do you select the right H.F. antenna? Who do you talk to and what do you say to get that tower permit? You'll find those questions answered in the **Antenna Buyer's Guide**. What are all those "bells and whistles" on the new rigs for? Which computer is best for the shack? The **Equipment Buyer's Guide** answers these questions and many, many more.

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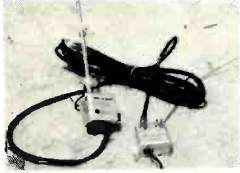
Yes, please send me

Both the **Equipment Buyer's Guide** the **Antenna Buyer's Guide**

Date _____ Name _____ Call _____
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Connects between scanner and cassette recorder mic/remote jack for "action only" recording. Internal speaker so you can listen while hooked up. 115VAC powered (12VDC, batt avail).



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ALL 120 CHANNELS

73's - 88's

Steve Steffen, SSB-7331A, sends out this card to his friends.

portion of this energy may back up through the power line and find its way into the receiver.

Locating fluorescent lamps as a source of noise is done simply by turning off the lamp and listening for a change in the receiver's noise level. Noise of this type sounds like a buzz since the lamp produces an electrical arc discharge in step with the alternating line voltage.

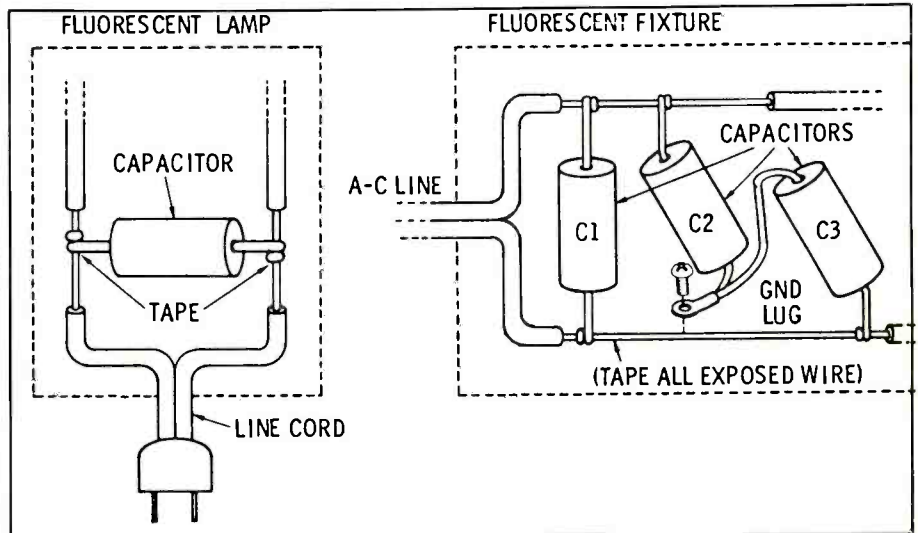
Some bypassing with 0.01-mfd tubular capacitors rated at 600 volts can help reduce the amount of the buzz entering the power line. During any of these steps be sure to remove the power from the lamp by pulling out the plug of a desk lamp, or removing the fuse or shutting off the circuit breaker in the case of a permanent fluorescent fixture mounted on a wall or ceiling.

Shown is a bypass capacitor installed in a fluorescent desk lamp that might be located near a CB transceiver. The lamp is opened and the point where the line cord enters the case is located. Strip away some insulation from each wire at this point and solder the capacitor across the wires as shown. The final step is to wrap exposed joints with elec-

trical tape to prevent short circuits. After the job is completed, turn on the lamp and CB set.

The other diagram illustrates the technique for suppressing buzz in a permanent fluorescent fixture. Here, three 0.01-mfd, 600-volt capacitors are installed at the point where the power line enters the fixture. The first capacitor (C1) is installed as exactly as described for the desk lamp. The two remaining capacitors (C2 and C3) are each connected from the line to ground. The ground is the metal fixture itself, which, in most cases, is already connected to the electrical ground of the house wiring. A ground lug is very useful for connecting the two capacitor ground leads together and contacting them to the case. The ground lug is screwed to the fixture case after a small amount of paint (if present) is scraped from the case to ensure good electrical contact. Be sure to tape all exposed wires.

Items wanted at CB Scene: Questions, QSL's, shack photos, info on jamborees and coffee breaks, photos of CB gatherings, and news of what AM and SSB operators are doing on 27 MHz. **PC**



Eliminating fluorescent buzz.

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Radio Marabu, a German pirate station, sent some information to the column this month. The station operates in the "48 meter band" and its literature indicates frequencies of 6206 and 6318. Unfortunately, no schedule was included, but early Sunday mornings, US time, would be the best time to check this one. There's no mention of how much power is used, either. However, the material indicates the station is heard widely in much of Europe so perhaps US east coasters might have a chance at hearing the station. The format is alternative music and the address is Postfach 220 342, D-5600 Wuppertal 22, Federal Republic of Germany.

There's a new maildrop now being made available to pirate operators. International Alternative Radio, Box 132, Siskiyou Blvd., Ashland, OR 97520, will forward mail to any pirate station that makes arrangements. Reception reports should include three units of first class postage. IAR says that all data received from stations is kept "strictly confidential" and is "stored on DES encrypted computer files". Don't ask me why they're also including a street address! No information as to which pirates (if any) have availed themselves of this service.

WKEY-FM, a pirate in South Euclid, Ohio, has been making the local papers after the FCC began investigating the station. Owner/operator began the station last September because (a) he couldn't land a disc jockey job in the area and (b) he was dissatisfied with the music being played by area stations. Initially he kept the power level very low but later bumped it up to 40 watts ERP. His signal reaches many of Cleveland's eastern suburbs. The station is operating just below the FM band, at 87.9 MHz. Thanks to John Reiter in Youngstown, Donald Berhent in Willowick and John Thompson of Mentor, Ohio for sending in the clips on this one.

Radio USA was heard by Gary K. Hamlin in New York from 2227 to 2242 on 7415. The format was rock, commercial spoofs, satirical English lessons and the "RUDX Program" which featured details on pirate broadcasts. QSL's from the P.O. Box 5074, Hilo, HI 96720 address. Robert S. Ross in Ontario got a QSL from this station indicating a power of 40 watts. The QSL was signed by "Mr. Blue Sky."

Several people report receptions of **WJDI**. Robert Ross had them on the usual 1620 frequency from 0400-0423 and also signing on at 2300. Address given as Box 142, Cottekill, NY 12419. WJDI was the first pirate log for John Carlson in Massa-

WEEKEND MUSIC RADIO QSL

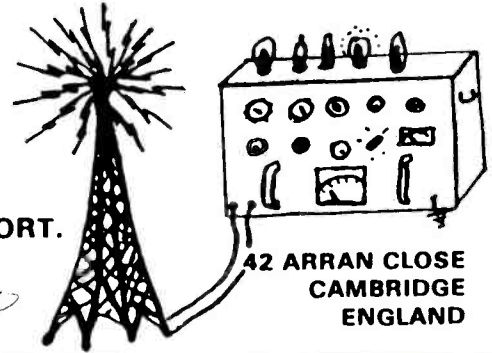
EVERY—SUNDAY ON 48/41m SHORT WAVE
DEAR STEVEN..... THE STAFF OF WMR CONFIRMS YOUR

REPORT OF:

DATE 11.18.89.....
TIME 18:31HOUR TC
FREQ: 15.04.36 Hz
SINPO: WEAK
POWER 1.00W

THANKS FOR YOUR REPORT.
PLEASE WRITE AGAIN.

SIGNED: *John Rogovitch*



Steve Rogovitch treasures this QSL from Weekend Music Radio in Scotland. There may be more tests from this station in the future.

chusetts. He had them at 0110-0145 with various rock selections from the 50's - 70's. The broadcast was announced as an equipment and maintenance test. In his reception report to the station John suggested the name of the town be spelled out on the air. Good idea as it's an easy one to mis-read.

Gary Hamlin had them between 0127 and 0220, sloganizing as "bootleg of the east... from out of nowhere."

The Voice of Tomorrow was spotted by Hamlin at 0038 on 7410 with usual racist commentary and a reference to the "White American Resistance Radio Network." He also heard them on 6240 between 2336 and 2345, although signals on that frequency were very weak.

Robert Ross logged **WKND**, announcing as "WKND Weekend Radio." This was from 0456 to 0525 on 6240.2. The format was rock and there were mentions of RNI (Radio New York International) and J-Rock. Also GMT time checks and a DJ who called himself the "Radio Animal." QSL's were promised and the Dr. Who theme was used at sign off.

WENJ was the first pirate for Eugene J. Forget, Jr., in New York state. He had them with golden oldies, talk and announcements from 2025 on 7415.5. One ID as "J-Rock USA, the worldwide voice of WENJ-1620 kiloHertz" and "Around the world, through the ionosphere and into your radio, this is J-Rock USA." Gave a number to call to phone in reports as well as the Hilo address. QSL gives shortwave frequencies of 6240, 6250 and 7480. Mark Morgan in Ohio heard them on 7415 at 0000-0054. Ray Babecki in New Jersey heard the station at 2100. Incidentally, bas-

ed on the reports I've seen it appears two or more phone numbers are used at various times.

Ray also had **United World Radio** on 7414 at 2200-2230 with political-type content. Usual address announced as care of Tagar, Room 258, Union Building, Stony Brook, NY 11794.

Radio 200 on 1580 kHz is being noted by Brother Michael Tripka in Pittsburgh. He's been noting this almost every Sunday night (Monday UTC) at around 0200-0300 with rock, new wave, disco and soul. Michael says at first the station sounded like it was "college kids playing games" but now there are well-produced announcements on the air.

Mark Morgan had an unidentified on 7415 at 0105-0145 with things by Devo, Queen, Joan Jett and so on. No ID at sign off. There were pauses between each song, apparently to change the record.

Steve Rogovitch is right—it's **Weekend Music Radio** in Scotland, not "World Music Radio" as I made reference to it in an earlier column.

Thanks to James Feeley in Georgia for sending me a tape of a **Voice of Tomorrow** broadcast. That's very much appreciated, James!

I'm sorry it's not possible to answer all of your letters but your support for this column is most gratifying! Please "keep those cards and letters coming, folks!" Needed are your pirate station loggings, QSL copies, information received from stations and news clippings about stations. You guys behind the microphones can help with information about your stations, something which is much enjoyed by the readers. **PC**

NEW AND EXCITING TELEPHONE TECHNOLOGY

Your Network Interface

Most phone companies have in the past few years been getting out of the inside wiring business. They either want the customer to be responsible for all the wiring inside the house, or ask the customer to pay a nominal monthly charge to have the phone company take care of the wire. The big questions have always been, "Where does my wire start and the phone company's end?" and "How do I know if it is my wiring at fault or the phone company's wire in the street?"

There is now a device in many houses that answers both questions. It is the "official" demarcation point between phone company and subscriber wiring and it provides a way to disconnect the house wiring and test the phone line in order to see if repair service should be called, or the subscriber should check the house wiring for breaks or shorts.

These new Network Interfaces may, or may not, also contain the "protector". Traditionally, the protector has been the demarcation point for the phone company. The protector is there to "protect" the phone lines and phone equipment from dangerous voltages such as lightning strikes. What the protector does is shunt high voltages to ground. It should continue working after it has shunted a voltage surge. But if the strike is particularly strong, it may permanently short the lines to ground. When this happens, the phone company has to come out and "replace the carbons".

If you look inside a protector, you will see what appears to be two large nuts or large brass screws. These are the carbons. They are connected one to each side of the phone line. If the phone line voltage approaches about 300 volts, they will conduct to ground. If the protectors have a dash of white paint on them, they are not loaded with carbon but are gas discharge tubes. They do the same job, but do it better and faster. If you have electronic phones or modems on the line, you are better off with gas tubes rather than carbons. Sometimes you can ask your friendly phone man to change out the carbons for gas tubes.

The Network Interface is designed to be accessible to the subscriber and the protector is not. So, sometimes the protector may be up high on the side of the house or under the house. The new Network Interface should be accessible to the subscriber, even if he is an apartment dweller. Apartments often have the protector away in a utility closet, which is not always accessible to the tenant.

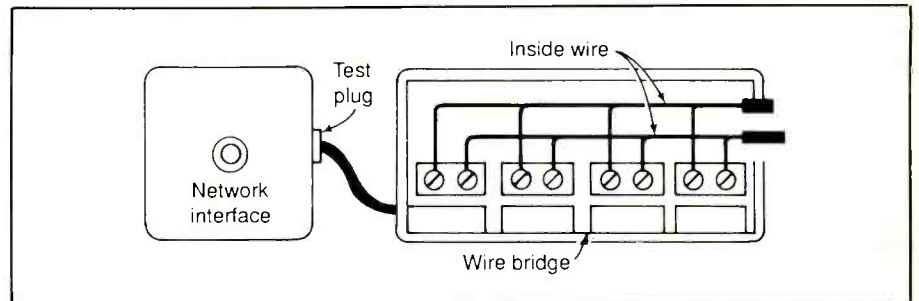


Figure 1. Simple two part Network Interface.

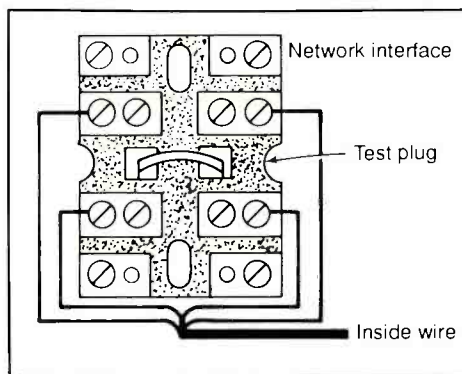


Figure 2. Interior Network Interface.

There are several designs of Network Interface, four of the most common are shown here. Figure 1, is the simplest Network Interface and actually is made up from simple off the shelf components. On the left is a standard phone jack, usually known as an RJ11, on the right is a standard phone wire junction box of the type sold at AT&T phone stores. Leading to the jack would be wire from the protector and connected to the junction block are the wires leading to the jacks in the house or apartment. Anyone wiring or rewiring the jacks in a house should consider installing an interface like this.

The next interface in Figure 2 is usually installed in basements and closets. Like all Network Interfaces it has a jack plug on it connecting the two sides of the interface. The third interface, Figure 3, is probably the most common you will see. It may be a single line device or hold up to six lines. It may be found mounted on the wall outside the house, or in the basement. The box is made of gray ABS plastic. This interface is different than the other three types shown here as the protector occupies the upper half. The

upper door is closed with a special screw so the subscriber cannot open it. The lower door can be opened with a standard flat blade screwdriver.

The last Network Interface shown in Figure 4 is designed for use in apartments. At first glance it looks like a standard flush mounted RJ11 jack. The giveaway is the pigtail of the modular jack hanging from the bottom. When you unscrew the cover plate of this combination Network Interface and phone jack, you will gain access to the inside wiring.

All Network Interfaces allow the subscriber access to the wiring with simple tools. No special phone tools are needed. If you have a medium flat blade screwdriver, wire cutters and strippers, you can service the subscriber's wiring or add jacks.

The big thing about Network Interfaces is that troubleshooting is easy. These days, if you call out the phone company for a repair and the fault is in your home wiring, it can become expensive. Unless you pay the telco a monthly payment to take care of your interior wiring you can be charged a fair amount. If the fault is in one of your phone instruments and the phone company technician has to make a trip to your house to tell you that, you will be billed for a service call. So before you call the phone company to report a fault in their equipment—check that yours is good first.

The first step is to take a good phone to the Network Interface and unplug the modular plug pigtail. You have now broken the connection between the house wiring and the incoming phone line. Now plug the telephone into the jack on the Network Interface. If the phone works normally, the fault is in the house wiring. If the phone does not work, try another phone or test your phone on another line. If the other phone also does not work, or the phone you tried works fine on another line, its time to call the phone

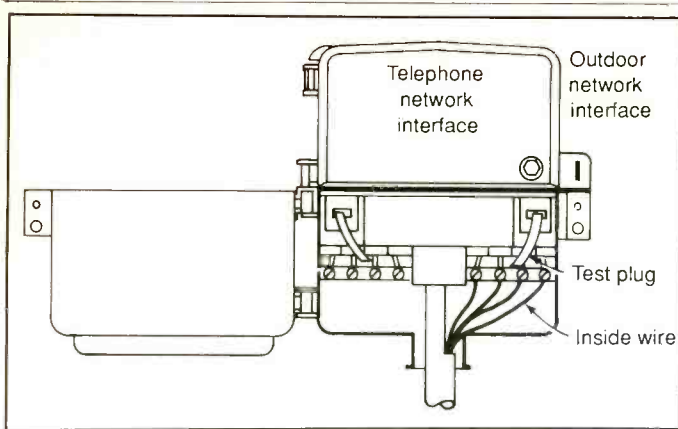


Figure 3. Exterior/Interior multi-line Network Interface.

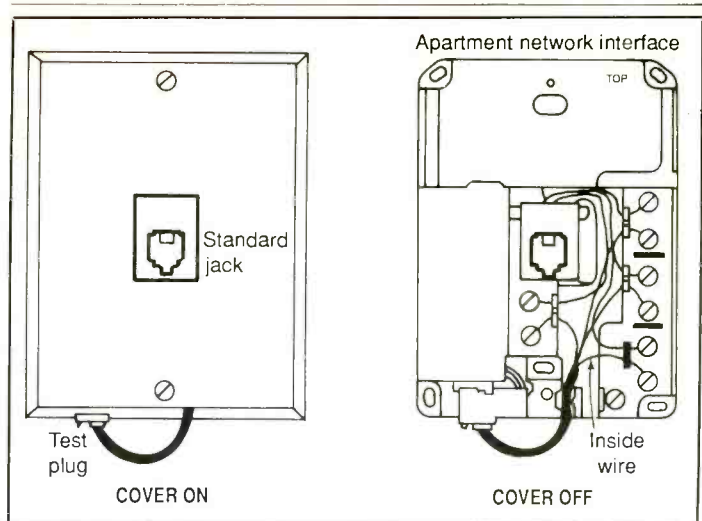


Figure 4. Apartment Network Interface.

company. What you have done is isolate the problem. If the fault is on the phone company's line, the repair is free. If the fault is your phone, or your internal wiring and you don't have a maintenance agreement, you pay for a service call.

Should the problem prove to be an in house wiring problem, you now have the means to fix it. This is not as bad as it sounds. The first thing to do is disconnect all the phones on the line. Reconnect the Network Interface and take a known good phone and try every jack. If all the jacks work with your good phone, you have a bad phone somewhere. Plug each phone in one

at a time until you find the bad one. You may also find that only one jack is bad, or just some jacks are bad. This will bring you to the next step of fixing the phone problem.

Most inside wiring problems are mechanical, someone shorted a wire or jack, or someone broke a wire. Sometimes a possum will have chomped through a wire in the basement. Gophers like to eat underground phone wire, but underground phone wire is usually the phone company's problem. A simple physical check—the old fashioned look-see—will find 99% of your problems. Broken wire can be fixed in any number of ways. The simplest way is to twist

the wires together and tape them to prevent them shorting. They can of course also be soldered, placed under a screw terminal or clipped together using insulation displacement connectors called "jelly beans" in the phone trade.

Of course if you can fix the wiring that is there, you can also add extra jacks or even really bit the bullet and get a new line installed and wire a new jack from the new Network Interface.

What to do with any broken phones? It is usually cheaper to throw them away and buy new unless you are handy at electronic repairs. **PC**

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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Thanks to reader Mike Flenz, WB9ANR, of ANR Enterprises, Neenah, WI, we get an inside look at the new transmitter site of WAPL-FM (105.7 MHz) in Appleton, WI. Mike's company did all of the AC, RF and control "plumbing." The construction of the site took about eight months. The equipment shown in the photos feeds into an eight-bay antenna atop a new 1,000 foot tower.

Televisioners in Miami watching WCIX-TV were surprised when a movie they were enjoying was suddenly interrupted by a shot of Giron, site of the Bay of Pigs invasion. The transmission came from Cuban TV, which was also sending out programming on Channel 3 (a vacant channel in Miami) which could also be easily seen in South Florida. The programming went on for two days and was generally believed to be a reminder from Fidel Castro that the forthcoming *TV Marti* transmissions directed from the U.S. to Cuban audiences aren't going to be tolerated without reprisals in kind directed towards Florida.

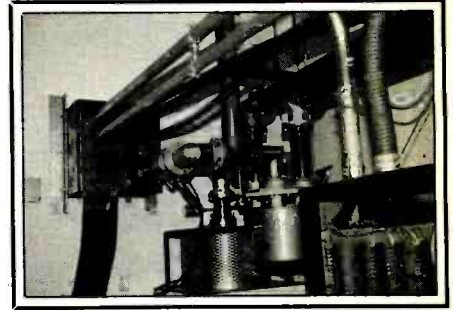
Some interesting stats on American radio listeners have been circulating that you may not have yet encountered. Nationally, the most popular format is country music. Out of more than 11,000 AM/FM broadcasters, almost 2,500 consider country music to be their primary form of programming. The second most popular is adult contemporary, sometimes called "light" or "soft" rock, which occupies the air time of more than 2,300 broadcasters. This is followed in popularity by about 1,000 religious and gospel stations, and almost as many that play Top 40 selections.

At the other end of the popularity scale, there are stations serving specific audiences that present highly specialized formats, such as American Indian (7 stations), Bluegrass (9 stations), Blues (6 stations), Comedy (3 stations), Polka (6 stations), and Reggae (4 stations).

One of the faster growing formats is known in broadcasting as urban contemporary. This is programming emphasizing dance music that is aimed at black audiences. Six years ago, there were only 53 stations running this format, although today the number is approaching 200. In past years, the traditional formats broadcasters used to reach black audiences were gospel and rhythm and blues. Compare that in 1983, the older formats were carried on 190 stations, but today less than 85 stations continue to use the formats. One of the reasons urban contemporary has gained in popularity is that surveys have shown that it attracts a much wider audience (including non-



At WAPL-FM (l. to r.) we see a new BE 30 kW transmitter, two STL and control racks, a 25 kW Collins stand-by transmitter, a 3" coax switch, and 50 kW dummy load. (Courtesy Mike W. Flenz, WB9ANR.)



The 3" RF plumbing of the coax switch used to send RF to the antenna or the dummy load at WAPL-FM. The copper bulkhead is for lightning protection. (Courtesy Mike W. Flenz, WB9ANR)

blacks) than the more traditional formats. This, of course, translates into dollars.

Almost three out of every four of those who enjoy listening to stations that play pop music feel that the stations say too little about the selections being broadcast. More than half of the listeners are irritated when stations don't bother to identify the names of songs and artists.

We raised our eyebrows when we got a colorful bumpersticker from a station showing its frequency as "FM 92.4." Turned out to be sent to us by Ferdy DeMartin, of Colombier, Switzerland. The FM channels in

the U.S. and Canada all end in odd numbers. This isn't true everywhere else in the world, but it's still a bit of a shock when you first see it on a bumpersticker!

Those of us who dearly love AM radio haven't been overjoyed to note that, in recent years, it hasn't retained the popularity with the public that it once had. One of the reasons often cited has been that FM stations offer superior sound fidelity for music broadcasts. Part of the problem has been that manufacturers of AM receivers have, in order to reduce the possibilities of adjacent channel interference, been producing re-

Applications For New FM Stations

CA	Avenal	105.7 MHz
CA	Oxnard	89.1 MHz
CA	Quincy	100.3 MHz
CO	Pueblo	89.7 MHz
GA	Hephzibah	88.3 MHz
IA	Rock Valley	106.9 MHz
IL	Golconda	105.1 MHz
IN	Garden City	102.9 MHz
KY	Elizabethtown	90.9 MHz
MO	La Monte	97.1 MHz
MT	Great Falls	107.3 MHz
NC	Durham	90.7 MHz
NC	Fairbluff	105.3 MHz
NC	Leland	94.1 MHz
NH	Walpole	91.7 MHz
NM	Santa Fe	94.7 MHz
NY	Albany	106.5 MHz
OR	Nyssa	98.7 MHz
TN	Lawrenceburg	97.5 MHz
TX	Stanton	105.9 MHz
WA	Wphrata	93.9 MHz
WI	Eau Claire	91.3 MHz

New AM Permits Granted

OR	Beaverton	1040 MHz
WA	Buckley	740 MHz

New FM Permits Granted

AL	Mobile	88.5 MHz
CA	Barstow	95.9 MHz
CA	San Diego	98.1 MHz
FL	Callaway	103.5 MHz
FL	Key Colony Bch.	105.5 MHz
ID	Hayden	94.5 MHz
IL	Bushnell	104.7 MHz
KS	Salina	104.9 MHz
KY	Manchester	105.7 MHz
LA	Bunkie	104.3 MHz
LA	Erath	92.9 MHz
MO	Bonne Terre	104.3 MHz
NM	Taos	99.9 MHz
NY	Clyde	93.7 MHz
OH	Lancaster	103.5 MHz
TX	Galveston	106.5 MHz
TX	Hondo	98.5 MHz
WV	Lindside	106.7 MHz
WV	Welch	102.9 MHz



New AM Callsign Assigned

KSWX Long Beach, WA

New FM Callsigns Assigned

KCIJ	Ft. Polk, LA
KCVS	Salina, KS
KIFM	San Diego, CA
KJKS	Cameron, TX
KLTW	El Dorado, AR
KMJY-FM	Newport, WA
KPOR	Porterville, CA
KSCQ	Silver City, NM
KTBA-FM	Tuba City, AZ
KWTY	Cartage, CA
KXXZ	Barstow, CA
KYYC	Shelby, MT
WACQ-FM	Tallahassee, FL
WAYF	Mobile, AL
WDIC-FM	Clincho, VA
WELC-FM	Welch, VA
WHIJ	Ocala, FL
WLEL	Leland, MI
WLTB	Vestal, NY
WMCI	Mattoon, IL
WNYR-FM	Waterloo, NY
WOTH	Surgainsville, TN
WQLS	Arlington, NY
WRVY-FM	Henry, IL
WSGC	Ringgold, GA
WUCX-FM	Bay City, MI
WWIS-FM	Black River Falls, WI
WYND	Hatteras, NC
WYVC	Camden, AL
WZRT	Rutland, VT
WZST	Appomatox, VA

Seeking to Change AM Facilities

KINY	800 kHz	Juneau, AK	Wants 10 kW days
KNOB	1050 kHz	Frazier Pk., CA	Wants 10 kW
KSSA	1600 kHz	Plano, TX	Move to Cockrell Hill, TX
KUTR	860 kHz	Salt Lk. City, UT	Days 10 kW, 3 kW critical hrs.
WDDD	810 kHz	Johnson City, IL	Wants 400 watts at nite
WMNE	870 kHz	Menomonie, WI	Move to 880 kHz, 210 watts at nite
WORR	960 kHz	Quebradillas, PR	Wants 5 kW
WQWM	1050 kHz	Kaukauna, WI	Wants 500 watts at nite
WREF	850 kHz	Ridgefield Ctr., CT	Wants 5 kW

Seeking to Change FM Facilities

KELE	100.1 MHz	Aurora, MO	Move to 100.5 MHz
KICR-FM	104.9 MHz	Oakdale, LA	Move to 98.7 Mhz
KKYS	104.9 MHz	Bryan, TX	Move to 104.7 MHz
WDJW	89.7 MHz	Somers, CT	Move to 105.3 Mhz
WOLR	9.3 MHz	Branford, FL	Move to Lake City
WVVY	99.3 MHz	Grifton, NC	Move to 99.5 MHz
WWZD	106.3 MHz	New Albany, MS	Move to 106.7 Mhz

AM Facility Changes Granted

KAAN	870 kHz	Bethany, MO	Reduced to 930 watts
KCLP	1180 kHz	Claude, TX	Move to Amarillo, run 240 watts at nite
KGRN	1410 kHz	Grinnell, IA	Reduced to 3 kW
KHAC	1110 kHz	Window Rock, AZ	Move to Tse Bonito, 880 kHz
KLTK	1140 kHz	Grove, OK	Reduced to 210 watts
KMIN	1400 kHz	Grants, NM	Move to 980 kHz, 250 watts at nite
KPRM	870 kHz	Park Rapids, MN	Power to 25 kW days
KXEG	1010 kHz	Tolleson, AZ	Power to 7.5 kW days
WACE	730 kHz	Chicopee, MA	Power to 500 watts, nites
WBMA	890 kHz	Dedham, MA	Move to Sherborn
WGLI	1290 kHz	Babylon, NY	Power to 265 watts
WGTO	540 kHz	Cypress Gdns., FL	Move to Pine Hills, 50 kW
WIDU	1600 kHz	Fayetteville, NC	5 kW days
WNCR	1080 kHz	St. Pauls, NC	50/25 kW power
WRYT	1080 kHz	Edwardsville, IL	337 watts, nites
WVCH	740 kHz	Chester, PA	50 kW

FM Facility Changes Granted

KBUZ	99.3 MHz	El Dorado, AR	Move to 99.1 MHz
KCRM	103.1 MHz	Cameron, TX	Move to 103.9 MHz
KWCK	99.3 MHz	Searcy, AR	Move to 99.9 MHz
WBLE	95.9 MHz	Batesville, MS	Move to 100.5 MHz
WGLO	95.3 MHz	Pekin, IL	Move to 95.5 MHz
WIST	94.3 MHz	Lovelville, TN	Move to 94.5 MHz

ceivers with a narrower frequency response (fidelity).

A new FCC technical standard that is to commence implementation in mid-1990 (complete compliance by mid-1994) is known as NRSC-2. This standard permits AM stations to transmit a higher fidelity signal minus the adjacent channel interference problem of the older FCC transmission standards. Furthermore, receiver manufacturers will be marketing newly designed wide-band, high fidelity AM receivers that will reproduce these transmissions with a sound quality that is substantially improved (from the present 3 kHz fidelity to 6 kHz). It won't be exactly as good as FM, but it will be an improvement that most listeners will immediately notice and appreciate.

Proposed TV station WTVK (Channel 26) in Knoxville, KY decided not to commence broadcasting. WNHT (Channel 21), the CBS-TV affiliate in Concord, NH went dark and merged some of its operations with independent station WNDS-TV (Channel 50) in nearby Derry, NH. A soft local advertising market was cited as the reason for the closing of the station.

The FCC is now allowing FM and TV broadcasters to change their community of license without the change triggering the flow of applications for competing stations.

Shifting populations in some regions have also shifted the economic hubs of some community areas to the extent that stations located in one small town or rural area have found that their audience has moved out from under them to another nearby community. Under certain conditions, the FCC will approve reallocating the FM or TV frequency allotment to that community.

The broadcasting industry has been lobbying the FCC to discontinue its practice of permitting commercial FM stations to use directional antenna arrays, also allowing short spaced FM stations (stations having reduced distances between their locations and others). Broadcasters complain that such practices threaten to degrade the quality of the service they seek to provide. The feeling

is that the lobbying efforts will eventually produce results.

This column is looking for: News items about AM/FM/TV broadcasters; AM/FM/TV DX loggings and information about courtesy programs, QSL's, veri signers; bumperstickers and station logos; Photos of AM/FM/TV station facilities; and any relevant items relating to broadcasting. **PC**

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AM Callsign Changes

New	Old	
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KBXG	KBPI	Denver, CO
KKUL	KBSR	Corpus Christi, TX
KVGR	KGVV	Templeton, GA
KXBT	KIEZ	Ventura, CA
WAAJ	WAAY	Huntsville, AL
WBLL	WPKO	Bellefontaine, OH
WCCP	WBES	Clemson, SC
WEZI	WWBA	Memphis, TN
WGID	WRVR	Memphis, TN
WJDK	WXGI	Richmond, VA
WKIQ	WWLB	Eustis, FL
WKJN	WNFO	Baton Rouge, LA
WKXC	WNEZ	Aiken, SC
WLAW	WEDD	Fairhaven, MA
WLPR	WGRR	Prichard, AL
WNNR	WNYR	Syracuse, NY
WOBG	WPQZ	Clarksburg, WV
WPCI	WMRB	Greenville, SC
WRLX	WRRX	Tuscaloosa, AL
WSKO	WSPV	Buffalo Gap, VA
WTOW	WWGN	Washington, DC
WURD	WFLN	Philadelphia, PA
WZIP	WTRU	Jupiter, FL

FM Callsign Changes

New	Old	
KBST	KWKI-FM	Big Spring, TX
KIZS	KSJQ	Manteca, CA
KKUL-FM	KBSR-FM	Corpus Christi, TX
KLOA	KFIO	Ridgecrest, CA
KLTY	KOJO	Ft. Worth, TX
KMTB	KJKK	Murfreesboro, AR
KMXR	KSTE	Corpus Christi, TX
KOAK-FM	KLRZ	Red Oak, IA
KSJJ	KPRB-FM	Redmond, OR
KZLN-FM	KZLO-FM	Othello, WA
KZLR	KZLR-FM	Pine Bluff, AR
KZZL-FM	KPNP	Pullman, WA
WABT	WCRM	Dundee, IL
WAMX-FM	WPAG-FM	Ann Arbor, MI
WCKD	WCKP	Shelbyville, KY
WCQL-FM	WQMI-FM	York Center, ME
WDMX	WBNN	Vienna, WV
WERQ	WSPW	Mishawaka, IN
WEZC	WRLX	Hickory, NC
WKCD	WYCD	Kittery, ME
WKJN-FM	WKJN	Baton Rouge, LA
WKOJ	WKGL	Middletown, NY
WKQR	WSYE	Citronelle, AL
WNYF-FM	WOKW	Cortland, NY
WOLX-FM	WILV	Baraboo, WI
WOMG	WPRH-FM	Columbia, SC
WPLC	WYND-FM	Spotsylvania, VA
WQTR	WGFG-FM	Lake City, SC
WRKT	WHYP-FM	North East, PA
WRNQ	WLMS	Poughkeepsie, NC
WSKO-FM	WSPV	Buffalo Gap, VA
WSNL	WMRY	E. St. Louis, IL
WTFX	WMLW	Watertown, WI
WWBA	WOOP	Madison, FL
WWWB	WOJY	High Point, NC
WYLL	WTWV	Des Plaines, IL

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

Long after the fact, the press learned of a closed door meeting last year of the Senate Intelligence Committee which turned thumbs down on a secret Reagan Administration plan which would have supported a coup aimed at bringing down Panamanian leader General Manuel Antonio Noriega. Should it not have been possible to oust Noriega without violence the plan called for support of a rebel force headed by Colonel Eduardo Herrera, a Panamanian who lives in exile in Miami.

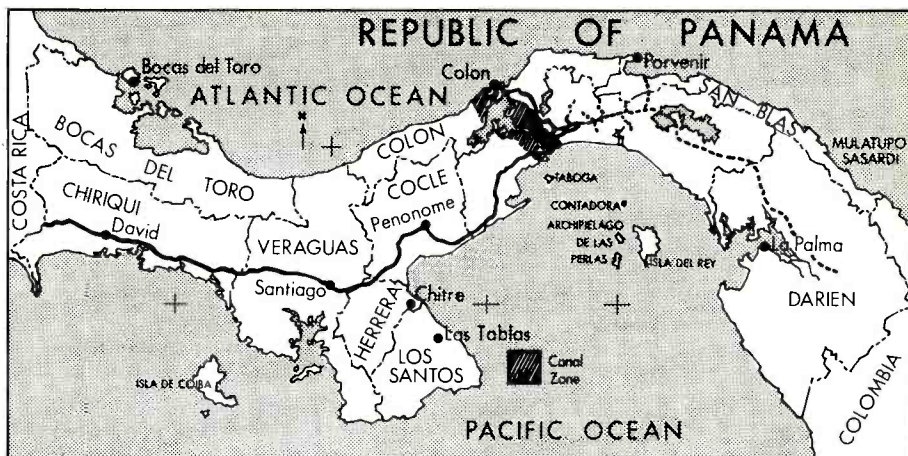
After its rejection, the plan was watered down to include only a few minor efforts aimed at helping to dislodge the general. One of these was the setting up of clandestine radio broadcasts. We're not sure what station or program this referred to. Maybe it was *Radio Constitutional*, an FM clandestine which went on the air around May of 1988.

Also on the Panamanian front, in April, authorities there announced the arrest of one Kurt Frederick Muse and confiscated his radio and TV broadcasting equipment. A Reuters News Agency report says that Muse admitted he ran an underground radio network called the *Voice of Liberty*, and that he taped programs at a building on the American military base in Panama City. So, perhaps it was this operation that was part of the administration effort. Heaven knows why they didn't just run the clandestine broadcasts right from the base where they'd be secure. Guess we can't give a "well done, boys" out on this one! Thanks to Steven Dreher of New York City for sending in the item from the April 24 *New York Times*.

Robert Ross of London, Ontario reports receiving a QSL from the anti-Libyan station *Voice of the Libyan People*, which is a mail forwarding house). Replies normally come postmarked somewhere in England, but Robert's was postmarked Louisville, Kentucky. The reply included a pamphlet describing the National Front for the Salvation of Libya, the group behind the station.

There's been a slight change in the address of the Eritrean Relief Committee—from Room 251 to Room 907 at 475 Riverside Drive, New York, NY 10115. The ERC has, on at least one past occasion, helped in getting a report to and reply from the *Voice of the Broad Masses of Eritrea*.

Speaking of addresses, Scott Edwards of Los Alamitos, CA says his report to a recently reported address for *Iran's Flag of Freedom Radio* (20 Rue de Condorcet, 75009 Paris) was returned by the French post office so this address is not a workable one.



Panama's leadership has been a major irritant to the US but the country has received only minor attention as a target of clandestine broadcasts.

Harold Sellers, one of the guiding lights of the Ontario DX Association, caught the "Madrid DX" feature on Spanish National Radio's DX program recently. The show mentioned "pirates broadcasting for Cubans in Angola" as *Radio Siboney*—the Voice of Cuban Exiles, at 1800-1900 on 6100 and *Radio Cadena del Sur* at 0700-1100 on 9565. These stations, certainly broadcasting in Spanish, don't look promising for reception here, especially the 1800-1900 on 6100. There might be some chance for 9565 at around 0700, though. *Radio Siboney* is named after the standard Latin song.

Two anti-Iranians that seem linked in one or more ways are the *Voice of the Feda'i*, operated by the Organization of Iranian Peoples' Feda'i Guerrillas which supports the establishment of a "People's Democratic Republic," and the *Voice of the Worker*, run by the Iranian Revolutionary Workers Organization, a pro-Soviet group. The *Feda'i* station is scheduled in Farsi at 0200-0325, 0900-0955 and 1600-1655 on 3935 variable and a second frequency varying between 4160 and 4250. The address is ACA, B.P. 43, 94210 Fontenay-sous-Bois, France. The Worker station is scheduled at 0330-0530 and 1900 to 1900 on a frequency varying between 4108 and 4160, also in Farsi. One or both of these have been heard by at least one DX'er in Florida during our local evening period but, normally, these two are very, very tough to log in North America.

The Voice of the People of Burma can be logged in the US under good conditions and

with careful tuning. It's run by the Burmese Communist Party and operates on 5110, slightly variable. Programs are in Burmese and local languages such as Karen, Shan and Jingpaw. Programs run from 1200 to 1330, except Mondays. Unfortunately, we have never been able to locate an address for the Burmese Communist Party, although surely there is an office in Beijing. We don't know if this is clandestine or not but Tim J. Johnson of Galesburg, Illinois found some curious activity on 5125 after 0000. He heard as many as three different stations operating on the frequency at the same time. Two were in Spanish, two were in upper sideband mode (one with male announcer, the other female) and a third was in AM, in English. The sideband stations were talking about Cuban politics, though Tim couldn't tell whether they were pro or con. The English language station was airing anti-Castro rhetoric but went off the air as abruptly as it came on and gave no ID. We've no clues as to what these might have been, Tim. Can anyone provide additional information?

That will do it for this month, except to again ask for your clandestine informational input in the form of loggings, background notes on stations and the groups behind them, photocopies of address information, news stories, etc. We can keep your name confidential if you wish. We also welcome questions about clandestine stations and we'll try to provide answers—or guesses—as best we can. We look forward to hearing from you.

Til next month, good hunting!

PC

GETTING STARTED AS A RADIO AMATEUR

Contests — a Fall Tradition

When most people think of the fall season, they probably think of cool weather changing colors and raking leaves. But to hams and SWL's alike, fall means excellent propagation—and easy DX'ing. Both are important parts of another decades-old ham tradition—contesting.

What is an amateur-radio contest, and how can it benefit you? Well, there are a number of ways, but before we examine them, let's get a few definitions out of the way.

Contests are generally on-air events in which amateur-radio stations work as many different stations as possible in a predetermined period of time (often a weekend). Depending on the particular contest, a premium is placed on working stations in different geographical regions (states, countries, grid squares, islands, and so on), or stations with different call sign prefixes (KA1AAA, KB1AAA, KC1AAA, and so on). These geographical regions or differing prefixes are called "multipliers". In the simplest sense, scores are determined by multiplying the number of two-way contacts (QSOs) by the number of multipliers (subject to the fine points of each particular contest). When all is said and done, the amateurs with the highest scores (there are usually several categories of competition, such as power level, number of station operators, bands used, and so on) receive certificates or plaques, and have their scores listed in the ham-radio magazines.

Before Novice Enhancement, most contest activity came from General-class and above licensees. That's not true today, however. Novices and Technicians have benefited greatly from ability to work in part of the 10-meter phone band (28.300 to 28.500 MHz). There's a lot of contest activity there; in fact, the "Novice phone band" is a real hot spot for many contests, including all the big DX contests. Not only can Novices (and higher-class licensees) work many new states or countries, but they can significantly improve their operating skills as well.

Contest operating is fast and furious. Sometimes, thousands of signals from every corner of the globe are crowded into a relatively small part of the band. A typical SSB contest QSO may only last a few seconds; the stations exchange signal and location reports, and perhaps a consecutive serial number or power-level identifier. At first, the whole scene may seem overwhelming,

but once you get your feet wet, you'll get the hang of it in no time.

Look at it this way: you could spend days looking for a Wyoming or New Hampshire contact to finish your Worked All States, (WAS) Award, or you could work them both in one afternoon in the ARRL Sweepstakes contest. The same thing holds true for DX contacts and DXCC (DX Century Club Award). Contesters regularly work WAS or DXCC in one weekend by participating in the right contest! Although you may not finish your certificate's requirements in one sitting, you'll probably be amazed at your progress.

Table 1 lists several major contests in which Novices can participate. There are many more contests, spread throughout the year, but these are the biggies. QST and CQ have monthly contesting columns. This is a good place to look for up-to-date contest information. *The ARRL Operating Manual* has plenty of detailed information on the fine points of contesting. It's a subject that is quite popular with many hams.

The extreme level of competition has

driven some amateurs to erect gigantic antenna arrays, powered by rows of dedicated amplifiers and top-of-the-line transceivers. It's sort of like Formula One racing; you wouldn't expect Mario Andretti to compete in his family station wagon, would you? Fortunately, ham-radio contesting is not like Formula One racing in every respect. Beginning hams with modest stations can have a lot of fun. That big-gun station in the South Pacific can pull your weaker signal through with ease. In that case, the contestant's top-notch station is working for you, too! Don't be afraid to enter the heat of the battle with only a transceiver and a simple antenna—the big-guns need you, and they almost always listen for weak signals.

What About SWL's?

SWL's can have a lot of fun in ham contests too. I can't think of any other time where there are so many signals emanating from exotic locations. In a big DX contest, you can hear stations from every little nook and cranny on the globe—many you've probably never even heard of! Countries of

Table I
Major HF Contests for Novice Activity

Month	Contest	Scope	Exchange	Details in:
Feb	ARRL Novice Roundup	Novices/Techs work others	Signal report & ARRL section	Jan QST
Mar	ARRL DX Contest, phone	W/VE stations work DXCC countries	W/VE stations: Signal report & state (or province)	Dec QST
Mar	CQ WPX (prefix) Contest, phone	All stations can all others	Signal report & age	Contest Corral, May QST
Jun	All Asian DX Contest, phone	Asian stations work all others	Signal report & age	Contest Corral, May QST
Jun	ARRL Field Day	Primarily W/VE	Transmitter "class"	May QST
Jul	IARU HF World Championship	All stations can work each other	Signal report & ITU zone	May QST
Sep	Worked All Europe, phone	EU stations work all others	Signal report & consecutive QSO	Contest Corral, Jul QST
Oct	CQ Worldwide DX Contest, phone	All stations can work each other	Signal report & CQ zone	Contest Corral, Oct QST or Sep CQ
Nov	ARRL Sweepstakes phone.	W/VE stations work each other only	See rules for details	Oct QST
Dec	ARRL 10-Meter Contest	All stations can work each other	W/VE stations: signal report & ARRL section	Nov QST



Just like any competitive sport, it pays to start early! Jeff Duquette, K1BE, of Agawam Massachusetts, is explaining the fine points of the grid-locator system to his son Nick. Nick was about four years old when this photo was taken—during the 1987 ARRL VHF contest.

islands that have no (or very few) international shortwave broadcasting outlets often support ham-radio contest activity. For example: small Pacific islands, such as Belau, Pitcairn, Macquarie, Banaba, and others; Western Sahara; rare republics in Soviet Central Asia; many Caribbean islands; and lots of others. Many of these stations will send you a QSL card if you write to them and provide the details of one or more of their contest contacts. See Table 1 for more information. During phone DX contests, listen from 28.300 to 28.700 MHz, 21.150 to 21.350 MHz, and 14.100 to 14.300 MHz during daylight and some evening hours, and 7.050 to 7.250 MHz and 3.750 to 3.850 MHz during late-night hours for contest activity.

The complete ARRL DXCC countries List of more than 300 DX "countries" is available from ARRL for \$1 at the address listed at the end of this month's column.

Contest Superstars

Although ham-radio contesting is extremely competitive and enjoyable in the US, becoming a top contester will probably not increase your demographic status—it may make you a little famous, but you probably won't be asked to dine at the White House. In the Soviet Union and several Soviet-bloc countries, however, the opposite may be true. There, ham contesting is taken more seriously. They call it Radiosporting, and it's quite popular. Just as we have baseball and football stars, they have Radiosporting stars! A ham friend of mine who recently returned from a trip to Bulgaria says the local hams told him that if a Bulgarian ham places first, second, or third in a major international DX contest, they'll receive a year's paid vacation! Top Soviet contesters also reportedly get the first opportunity to receive expensive Japanese ham rigs—the likes of which most Soviet hams have never seen. So, if you'd like to release some com-

petitive energy, why not give contesting a try. One warning: contesting can be addictive, although it's not generally hazardous to your health.

If you have any questions, or would like me to cover your favorite ham-radio topic in *The Ham Column*, write to me at POP²-COMM, 76 N. Broadway, Hicksville, NY 11801. Why not send along your photo while you're at it? See you next month. **PC**

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SIDE REJECTION: 50-55 DB True
BACK REJECTION: 40 DB True
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LENGTH: 17 ft., 6 in.
SWR: 1:1
HORZ. to VERT. SEPARATION: 25-30 DB
WIND SURVIVAL: 100 MPH
POWER MULTIPLICATION: 65X
AUDIO GAIN: 22 DB
WIND LOAD: 5.2

SPECIFICATIONS:
TYPE: Horz. & Vert.
Polarization: Single Feed
GAIN: 15.5 DB on DX
FRONT to BACK RATIO: 50 DB True
SIDE REJECTION: 45-50 DB True
BACK REJECTION: 35 DB True
WEIGHT: 24 lbs.
LENGTH: 12 ft.
SWR: 1:1
WIND SURVIVAL: 100 MPH
POWER MULTIPLICATION: 50X
AUDIO GAIN: 18 DB
WIND LOAD: 2.8

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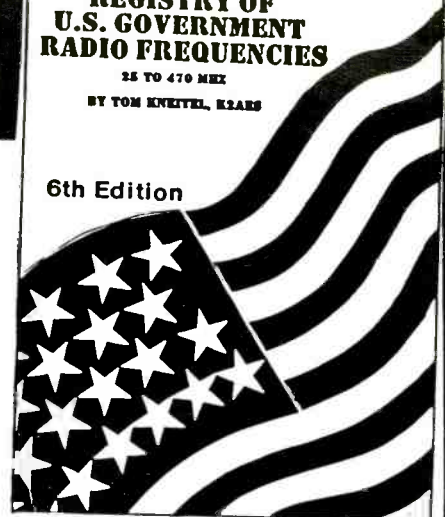
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TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Those who provide cellular service, charge for their efforts in a variety of ways, most of them confusing to the new owner of a CMT. There are one-time costs, monthly service charges, and per-call charges.

As soon as you get your CMT, and after you pass a credit check upon opening your account with a cellular service supplier, there's a service activation fee. The fee varies with individual companies, and may be substantially reduced during brief periods when special promotions are being run. The fee covers the cost of checking your credit, opening your account, assigning your CMT its own telephone number (NAM), and other incidental expenses that you'd think would be free because they were so happy to sign you up as a customer.

If you should cancel or suspend your service, or if the supplier cancels your service, and then the service is turned on again at a later date, the charge is again billed to you. Also, if you get rid of one CMT and replace it with another one, there's a start-up fee for the new hardware even though it may well be assigned the same NAM that you've had all along.

The basic monthly fee for maintaining your account, whether you use the CMT or not, is the access charge. Some service suppliers may include a bit of air time in the access fee. This arrangement could be referred to in terms of a minimum usage fee, which means you are billed for a certain minimum number of air time minutes each month, even if you don't use your CMT. Regardless of how it is sliced and diced, it's all incorporated into the access charge.

Added to the access charge will be any special optional extra services you may decide you want such as call forwarding, call waiting, incoming/outgoing call restrictions, and many other customized service features.

You, as the owner of a CMT, pay for all calls, whether you make the call from your phone, or receive the call. This is a good reason to be careful about whom you give out your CMT number.

When you place a call, the cash register starts ringing up "sale" as soon as the call goes out from your CMT. This includes any time it takes for the call to go through and ring before the other party answers the phone. The call is over, from a billing standpoint, when you press the "END" button on your CMT.

If you're disconnected, there's usually no charge. Same with incomplete calls (busy numbers or no answer), Many companies (although not all) don't charge for calls to

911, the Operator, Information or the Repair Service.

Cellular calls are usually timed by the minute. If a call lasts for 6 minutes and 8 seconds, it rings up on the cash register as one lasting 6 minutes and 59 seconds. A few companies are nice enough to run their clock in half-minute increments.

Billing for long distance calls you make is a bit different than this, and very often will cost as much as the same call from a landline phone, plus the per-minute cellular air-time charges. If you are receiving a long distance call, the caller is billed for the toll charges and you pay only for the local air-time charges.

If you make a local call while roaming (that is, operating out of your "home" operating area), you'll be charged a roaming rate, which usually means a daily service charge for each day you're using some other company's facilities, plus air-time charges that are somewhat higher than local accounts pay. This goes for incoming and outgoing calls.

Long distance calls made while roaming incur regular roaming charges, plus the long distance toll charges, whether you're calling your area or elsewhere.

Remember that the per-minute air-time



The Mitsubishi Model 900.



William Reitsma, Director of Transplant Coordinators, New Jersey Organ and Tissue Sharing Network, speaks to network headquarters on one of four NYNEX Mobile cellular phones recently donated to the organization. The phones will be used to help coordinate transplant recovery and transportation from one hospital to another, reducing the time needed to transport the organs.



Los Angeles Cellular Telephone Company became the first cellular carrier to activate a second digital switch. The dual switch system allows L. A. Cellular to double its call processing capacity to accommodate an increasing demand for cellular service in Southern California.

charges vary considerably from company to company. Moreover, different rates apply for peak hours and non-peak hours, with various calling plan packages available for those who have most of their requirements limited only to peak or non-peak hours.

Above all, don't forget that a bill for cellular service also requires that taxes be added to the bottom line. There's Federal Excise Tax (whatever that is) added to everybody's bill. In some areas there may also be a sales tax.

New Ideas

Crimes involving illicit drugs in the Washington, DC area have gotten so numerous and violent, that Bell Atlantic Mobile Systems and Fox TV (WTTG-TV/5) have worked out a plan to let CMT owners fight back. The WTTG-TV *City Under Siege* hotline wants calls from cellular owners reporting suspected drug activity in the District of Columbia, Falls Church, Alexandria, and the counties of Montgomery, Prince George's and Fairfax.

The hotline number is 1-800-33-FOX-TV. Calls made any weekday night to the hotline number from CMT's are free. The hotline personnel will direct callers to the appropriate enforcement agencies for action. Bell Atlantic feels that the large number of persons with CMT's in their vehicles offer the police many extra pairs of eyes on those troubled streets.

Customers at Shoney's restaurant in Brentwood, TN (near I-65) can order complimentary cellular service. The portable CMT (provided by Cellular One) is brought to the table by the server, and even long distance credit card calls are allowed.

Shoney's operates and franchises more than 1,500 restaurants under names such

as Shoney's, Captain D's, Lee's Famous Recipe Chicken, Fifth Quarter Steak House, and Pargo's. The cellular feature offered in Brentwood has proven popular and may be expanded to other properties in the chain.

They Switched

Los Angeles Cellular Telephone Company became the first cellular carrier in the nation to activate a second digital switch. The new Ericson digital switch increases the system two-fold and makes it the largest all-digital switching cellular system in the U.S.

This switch is a multi-million dollar facility that fits into a system providing numerous cell sites in the five-county Los Angeles metro area. The system can now handle more than 200,000 customers, with room for future expansion.

In 1988, almost 839,000 new cellular customers across the U.S. brought the total of subscribers in this country to almost 2.1-million. Currently, there are an average of 77,000 new cellular subscribers per month activating. Compare that to 63,000 per month in early 1988.

Helping Hand

NYNEX Mobile Communications donated four CMT's to the New Jersey Organ and Tissue Sharing Network. The NYNEX brand phones have a total retail value of over \$5,000.

The Network, with HQ's in Springfield, is responsible for the recovery of organs and tissues in New Jersey. The CMT's are used to maintain vital comms during the recovery and distribution of organs between donor and recipient hospitals, increasing the efficiency and effectiveness of this program.

NYNEX Mobile is the wireline cellular service supplier for a 5,000 square mile area that extends north to NY's Westchester and Rockland counties; south to Lakewood, NJ; east to the tip of Long Island; and west to Morristown, NJ. The company also operates nine sales/installation centers.

A Pocket Pick

The Mitsubishi Model 900 is a small CMT that will fit into your pocket, yet it offers a wide assortment of features. Weighing a tad more than 16 oz., it's about 7" high, 2 3/4" wide, and just over 1" deep. It's got to be one of the smallest and lightest weight CMT's available.

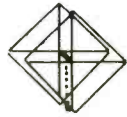
The 900 offers full 832-channel operation, dual NAM capabilities, an alphanumeric LCD display, an electrical function menu, a 100 telephone number memory, a carrying case, and a cigarette lighter plug. The 900 has the ability to scan the memory by both number and name, which is an especially useful feature that makes the unit a pocket-sized telephone directory.

There are several optional accessory kits available, too. For more information on the Mitsubishi Model 900, contact Jeff Nelson, Mitsubishi International, Corporation, 879 Supreme Drive, Bensenville, IL 60106.


This column wants: your ideas and questions, CMT experiences, new product information, information on new or innovative cellular services or application. **PC**

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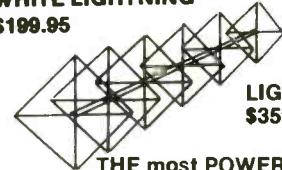
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Random-Wire Ham Tuner for SWL Indoor Reception

A small and simple L-network with low-loss design can do much to peak SWB signals picked up by a short-length indoor antenna wire. The small 2" by 3" by 2" MFJ 16010 tuner provided good results using a short loaded CB antenna, Fig. 1, on up to a 40" single wire. A tuner does not amplify the signal but helps to take best advantage of whatever signal your antenna intercepts by providing a good match to the receiver input. It may help on all bands but on one or two bands, in some instances, there may be no improvement over connecting the antenna directly to the receiver. It is on these bands that the antenna automatically provides an end-impedance that matches the receiver. Don't worry about that because your improvement comes on the many other bands.

Let's take a look at some arrangements and results. Our first check was made on a quarter-wavelength of wire cut for the 31M band. On this band the tuner was of no significant help. However, on other bands it did its job as shown by the + signs of the first column of Table 1. The output of the tuner was connected by way of a short length of coaxial line to one terminal of the coaxial switch. The banana plug at the end of the 24 foot antenna wire can be plugged alternately between the input of the tuner and the second input terminal of the coaxial switch. The coaxial switch of course must be changed over, too. It is a two-step procedure as shown in Fig. 2. The improvement ratio was, in general, higher as the wavelength of the band was increased. The tuner operates at peak between 1.8 and 30 MHz. However, it was increasing signal levels picked up on the short antenna down to the center of the MW band around 1200 KHz.

The simple tuner schematic is shown in Fig. 3. There is a tapped coil and a variable capacitor. The tapped coil adds electrical length to the wire antenna and the system becomes resonant to the frequency that is received. The variable capacitor helps to set up an exact resonant frequency as well as providing match to the low impedance receiver input. Its input and output employ SO-239 connectors. A short length of coaxial cable connects the output side to the receiver. The single-wire random antenna is terminated in a banana plug which plugs into the center of the antenna input side of the tuner.

To obtain the most efficient use of the antenna, it is necessary to find the correct set-



Fig 1. MFJ random-wire ham tuner peaks SWB reception when using a short indoor antenna.

Band Mtrs	24'	40'	80'
13	S	+	+
16	+	+	+
19	+	S	S
21	+	+	+
25	+	+	+
31	S	+	+
41	+	+	+
49	+	S	S
60	+	+	+
75	+	+	+
90	+	+	+
120	+	+	+
MW	+	+	+

S - Same Level Direct and Through Tuner
 + - Tuner Peaks Signal Above Direct Connection
 MW - 1600 kHz to Mid-Band MW Frequency

Table 1. Influence of tuner on signal level from antenna of indicated length.

ting of the inductor switch. inductance increases as the switch is turned counterclockwise from the minimum inductance position that occurs when the switch is rotated straight up. Maximum capacitance occurs when its dial is pointed directly left.

I was most successful when I first set the capacitor a dot or two to the right of straight up. Next, tune the receiver to the center of a chosen band or to a favorite listening section of that band. Tune to a quiet, no-signal, po-

sition on the band and switch the inductor for the highest background noise level. Now peak the capacitor. You may wish to try one position on each side of this setting to be sure you have the best. Each time rotate the capacitor for maximum output. Usually you will come back to the first position and set the capacitor to the position that produces the best signal. You can now check out the results on a received signal, double-checking the inductor position on each side once

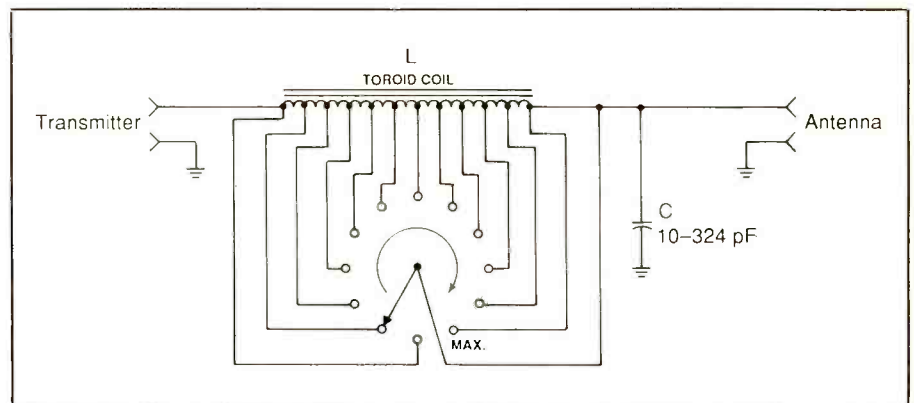


Fig 2. Checking out performance of ham tuner for SWB reception.

Table 2

Mtrs	A	B
13	+	+
16	+	+
19	-	+
21	S	+
25	+	+
31	+	+
41	S	+
49	S	+
60	S	+
75	+	+
90	+	S
120	+	+

A - 24' Through Tuner and 40' Direct

B - 40' Through Tuner and 24' Direct

+ - Higher, S the same, and - lower

Table 2. Comparison between two antennas with one connected through tuner.

more in case you have missed the best setting for the coil. If you are using the comparison set-up, you can change over between direct wire and through the tuner setting of Fig. 2 to notice the difference that the tuner provides.

When you are not interested in working with a test set-up, just connect the tuner output directly to the receiver input. Follow the same procedure in peaking the tuner for maximum signal delivery. Don't forget to log the best settings for inductor and capacitor on each band. If you use a second indoor wire you must do a separate log for it. A table of settings avoids a lot of trouble when you wish to switch from one band to another. The second single wire antenna tried was our 40-footer. Only low bands gave us no improvement. They were 19M and 49M. Other bands showed an improvement in signal level. Improvement on some bands was better than on others as should be anticipated because of changing reactances.

The third column shows results with and 80' single wire pretty much folded-back on itself. Despite its length, the tuner improved results on all but two bands. These two bands were again 19 and 49 meters and, I suspect, the folded back configuration is not much better than a 40-footer except at very low frequencies. The story with and 80-footer stretched out might be very much different.

It is important to remember that, in general, you will be picking up higher signal levels as you lengthen a random wire. However, to do so, try to lead a long wire away from the receiver location as best you can. You can bend and go around as need be, but always keep it moving away from the radio and not back toward it. An exception to that was the closed-loop described in a previous column, which also gave a considerable

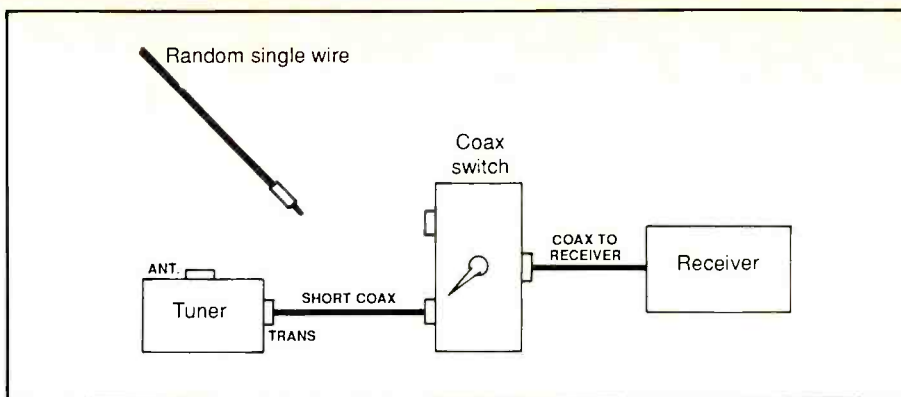


Fig 3. Circuit diagram of random single-wire tuner.

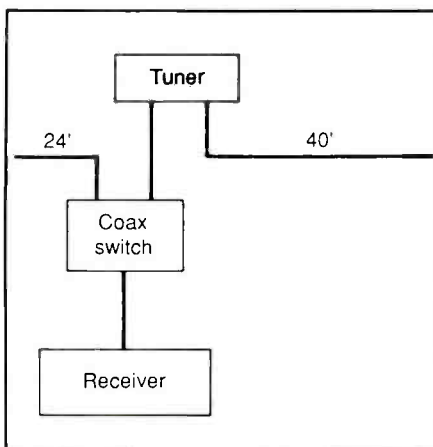


Fig 4. Comparing antennas with one direct and a second through tuner.

boost to the MW band reception. This a two-terminal antenna and not adapted to the single random-wire set-up being discussed. However, I do plan some loop tests with the tuner.

DX Band Checks

Even a very short 11' (cut for 13M) is a jewel where space is much limited. You can really take advantage of a random-wire tuner to peak the signal on bands 13 through 41 meters. The most popular DX bands are located in this frequency range.

An interesting test was made comparing a 24' wire with tuner and a 40' wire without, column A. Results are shown in Table 2. It indicates that the general performance was substantially better with the short wire aided by the tuner. If you must use a short wire you can do well using a good random-wire ham tuner. Even though the tuner does not operate at peak efficiency on the MW broadcast band, it does well up into the middle of the band and you do obtain some gain with maximum inductance and maximum capacitance settings of the two tuner controls.

Now if you switch the tuner over to the longer 40' wire, column B, things change,

giving this combination a plus on all but one band as compared to the direct connection of the 24' wire. Again, the test demonstrates that using a long wire is feasible. Nevertheless, you do get good results with a short wire, too, with the aid of a tuner. In both cases the tuner aided in delivering the better signal level to the receiver. A tuner can be a big help when you are indoors trying to squeeze as much signal as you can in a difficult situation.

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The emergency radio beacons may transmit on any one of the following distress channels:

- 121.5 MHz All units
- 243.0 MHz Most units
- 156.8 MHz Some marine units
- 406.0 MHz Brand new distress system

Most programmable scanners may easily tune in 121.5 MHz, as well as 156.8 MHz, EPIRB frequencies. More expensive programmable scanners might also tune in 243 MHz, used primarily by the military, and the new 406 MHz EPIRB distress frequencies.

If you live near an airport, it's easy to pick up 121.5 EPIRB signals from the many accidental activations that occur due to "hard landings". Most aeronautical EPIRB's self-activate from a crash, or extra hard jolt.

If you live near the water, try 156.8 MHz—not only will you hear EPIRB's, but chances are you'll hear voice distress calls, too, on the marine band.

There are now 4 classifications of marine emergency position indicating radio beacons—Class A, Class B, Class C, and Class 406.

Class A EPIRB's operate on 121.5 MHz and 243 MHz simultaneously. These are the two international distress frequencies for emergency signaling to overhead aircraft, orbiting satellites, and selected ground stations. The Class A EPIRB emits a warbling tone on these two frequencies.

Class A EPIRB's are self-activated, automatically, when they contact sea water and float free. Class A EPIRB's are commercially rated equipment required on ocean-going commercial vessels, and vessels that carry passengers for hire. They are expensive—about \$500.

Class B EPIRB's are less expensive—around \$200. They operate on the same frequencies, but do not activate automatically in contact with sea water. They must be activated manually. Class B EPIRB's are excellent for pleasure boats cruising throughout the world. A Class B EPIRB could also be used successfully in rugged mountain terrain, or out in the desert, to signal for help. The Class B EPIRB has the same amount of transmit output power, about a watt, to reach overhead aircraft and search and rescue satellites orbiting the earth.

Class C EPIRB's do not operate on aeronautical distress frequencies—they operate on marine VHF Channel 16, and marine VHF Channel 15 (156.800 and 156.750).



Class B. EPIRB system for marine and land use.

These two marine channels are not monitored by orbiting satellites. The range of the Class C EPIRB is limited to line-of-sight reception by fellow mariners in the local vicinity, as well as elevated Coast Guard antennas on shore. The Class C EPIRB idea never really took off among boaters. The advent of the tiny handheld transceiver, kept dry by a waterproof vinyl bag, makes it just as handy to squawk for help in a life raft with your handheld, rather than relying on a very expensive emergency radio beacon that simply sends out tones on Channel 16 and Channel 15. I would rather have the handheld!

The new EPIRB is called "Class 406". These advanced beacons transmit on the worldwide frequency for satellite-aided search and rescue, and include information on ship identification, type of emergency, and other digitized identification information. Three versions of these EPIRB's are available—one that self-activates, another one that is manually activated, and the third one that self-activates and also has a built-in heater to keep it warm during severe icing conditions.

The U.S. Coast Guard has ruled that un-inspected fishing vessels operating on the high seas must have an FCC type-accepted

Radio Beacons

ELT	Emergency locator transmitter	Airplanes
EPIRB	Emergency position indicating radio beacon	Boats
SARSAT	Search & rescue satellite-aided tracking	All users
COSPAS	Space system for search of vessels in distress (Russian)	Primarily boats
COSPAS-SARSAT	Joint venture between Russia & the United States of America	

406 MHz EPIRB onboard by 1994.

The most popular EPIRB's found aboard boats, and also found aboard aircraft, backpackers, and overland rescue agencies are Class A and B EPIRB's operating on 121.5 MHz and 243 MHz. Polar-orbiting satellites monitor the distress channels and determine the approximate position of the activated EPIRB through Doppler shift analysis. The satellite simultaneously passes the reception information to centralized computer-based stations throughout the world. Here in the United States, Scott Air Force Base, in Illinois, receives the information and reports it from their rescue coordination center. If the signal appears to be in the water, the information is relayed to the local Coast Guard rescue coordination center that serves that region.

It takes about 4 minutes of transmission time for the satellite to get a fix. The satellites circle the earth every 102 minutes at an altitude of 528 miles. We have 2 satellites, and Russia has 3 satellites. This emergency satellite reception system gives northern hemisphere coverage covering a circular area within a 2,000-mile radius to a line-of-sight ground station. If the satellite is not within range of a ground station, the information is lost.

Thanks to the terrific satellite reception capabilities of Scott Air Force Base in Illinois, any activated EPIRB within the United States, and well off to sea, is easily received, and plotted to within 2 or 3 miles of its actual position. It's then up to local agencies to track it down.

And what do local agencies find when they finally pin down the exact position of the activated radio beacon? Nothing but a false alarm! In fact, for every 100 activated EPIRB "finds," 92 are simply accidental activations! This is a major problem—these EPIRB's are going off everywhere, and their alarms are mostly accidental.

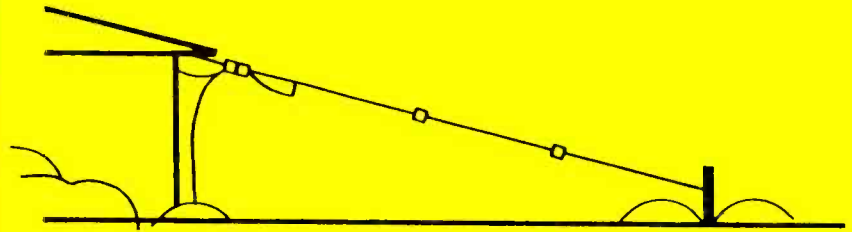
Most search and rescue officials blame the operator—too hard an aircraft landing, or the careless mariner that accidentally hits the EPIRB "ON" button. This may be true, but the major fault is in the device itself and the manufacturers who build it!

EPIRB's don't make any noise when activated. That's right, not a squeak comes out of them if they accidentally get turned on. Only a tiny little red LED may illuminate, and this is hardly enough warning to the operator that he is sending out an accidental distress call. It's a manufacturing blunder, in my book.

Credit goes to the United States Coast Guard Auxiliary as well as the Civil Air Patrol for their hundreds of hours of volunteer time tracking down activated ELT's and EPIRB's. Too bad much of their time is wasted with a 92 percent false alarm rate.

However, if you go into rugged terrain, or out to sea, or fly on missions over uninhabited territory, an EPIRB could be your very best companion. They are inexpensive, and a valuable aid to attract attention from orbiting satellites and overhead aircraft. **PC**

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Parameters	Value	Status Indicators	Value
Longest duration:	0	Frequency:	800.6000
Minimum duration:	0	Signal:	OFF
Delay:	2	Time:	06:42:51
Autolog (O,S,D):	0	Monitor time:	1.05
Bounceback:	0	Scan rate:	9.65

Air rescue command channel

800.0000	800.1000	800.2000	800.3000	800.4000	800.5000
800.0100	800.1100	800.2100	800.3100	800.4100	800.5100
800.0200	800.1200	800.2200	800.3200	800.4200	800.5200
800.0300	800.1300	800.2300	800.3300	800.4300	800.5300
800.0400	800.1400	800.2400	800.3400	800.4400	800.5400
800.0500	800.1500	800.2500	800.3500	800.4500	800.5500
800.0600	800.1600	800.2600	800.3600	800.4600	800.5600
800.0700	800.1700	800.2700	800.3700	800.4700	800.5700
800.0800	800.1800	800.2800	800.3800	800.4800	800.5800
800.0900	800.1900	800.2900	800.3900	800.4900	800.5900

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SCANNING VHF-UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

The weather is about to get cooler, which means some long nights of scanner listening. Now's the time to let us here at POP'COMM know about what you are tuning in. In return, we'll let other readers know about your intercepts as well. Here we go for another month:

Bruce A. Prescott, Registered Monitor KMA1GN, of Bellingham, Massachusetts, says he hears a constant series of tones on 37.00 MHz. He said he located the possible transmitter sites, however, they are in the middle of some fields in Mendon, Mass., and Millis, Mass. he says that military helicopters frequently fly over these sites, however, there are no visible buildings or antennas. He's turned to *Scanning VHF/UHF* in an attempt to find out what these signals are. We checked out files and could not come up with anything on this. It might just very well be a paging transmitter for the military. If anyone has any ideas on this one, please drop us a line at POP'COMM. Thanks!

Russell Wright, WN4VCH, of Houston, Texas, says he was able to monitor several Mexican stations during a recent temperature inversion band opening. He heard the following: 143.70, 143.75, 143.80 and 143.85, mobile phones; 163.20, paging (over top U.S. marshals); and 165.6875, another Mexican station. In addition, he also heard the following skips stations almost daily last spring: 30.48, "Thrush," a military repeater; 32.10, Caribbean repeater; 32.20, E645 working V901, military; 32.45, Caribbean station, possibly security; 32.85, JR working FZ, British accents; 34.00, aircraft in French; 34.50, 19B working 13, military. Thanks for sharing your catches, Russell.

Dennis O'Shea of Chicago, Illinois, writes in to inquire about what frequencies he might hear cordless phones on in his neighborhood. The handheld phone side of the conversations can be heard on these frequencies: 49.67, 49.845, 49.86, 49.77, 49.875, 49.83, 49.89, 49.93, 49.99 and 49.97. The base stations operate on the following frequencies (paired in the same order with the previous list of handheld frequencies): 46.61, 46.63, 46.67, 46.71, 46.73, 46.77, 46.83, 46.87, 46.93 and 46.97. Don't be surprised at the range of the cordless phones that you hear.

Robert S. Watkins of Rehoboth Beach, Delaware, says he owns a Uniden Bearcat 210XL and wanted to know whether it could be modified to increase the number of channels from 18 to 50 or 100 or whether it could be modified to monitor aircraft of the 800 MHz bands. We have not heard of any

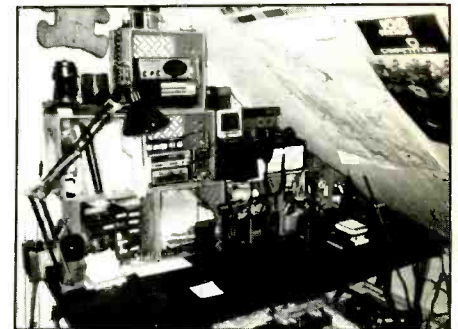
possible modifications here at POP'COMM. Even if it could be modified to tune in the 108-136 MHz aircraft band, it would not be able to receive aircraft because aero stations transmit in the AM mode and your scanner is an FM receiver. It also would not be possible to modify the RF circuitry in your radio to track a band so far out from its normal coverage in an attempt to tune in 800 MHz. My routing suggestion in these circumstances is if you want to hear a band your current radio cannot tune is to go out and buy a radio that will cover it, or consider buying an external add-on converter that will tune the desired band.

George M. Kupraszewicz of Detroit, Michigan, recently bought a Uniden Bearcat 950XLT scanner and was curious as to its CTCSS capability. Basically, many commercial or public safety VHF/UHF two-way radio stations transmit a subaudible tone in the range of 67 to 250 Hertz. This subaudible tone will allow other radios in the same system to tune in only those radios also associated with their system. This is especially useful when there is more than one user on a given radio frequency in an area. For instance, if there are two police departments 30 miles apart, they may be able to hear each other's transmissions on the same frequency, but probably don't have any desire to. Thus, by the use of Continuous Tone Coded Squelch Systems, also known by the tradenames of Private Line (PL), Quiet Channel, Quiet Call, etc., radios can be set up to screen out all other unwanted calls. Let's say there is a police department in your town using the frequency of 154.815 MHz. Let's also say that in a town 30 miles away, another police force is also using 154.815. However, you have no desire to listen to that other department; you only want to hear the calls in your own town. If the two towns are using separate CTCSS tones and you can figure out which of the standard 38 tones are being used (hit and miss/trial by error is used by most Bearcat 600/950 users), you then can screen out the other town's calls. It's a neat feature never offered before in scanners. If the screening out calls is something you need to do in your metro area, the Bearcats 600/950 are worth taking a look at.

Jim Guffey of Lake St. Louis, Missouri, has a Uniden Bearcat 100XLT handheld scanner and wanted to know whether it could be hooked up to a base antenna. Absolutely! The antenna connector on the radio is called a BNC connector, however, most connectors that come on coaxial cable are PL-259 connectors. What you'll need to do is purchase an adapter from the PL-259



The master console of John Myers, Registered Monitor KWA7CH, Spokane, WA.



This is the complete base setup of Tom Delasin in Manchester, New Hampshire. Tom is a member of the New Hampshire State-wide Notification System, which uses UHF radios to keep other members in touch when important events happen on the radio. How 'bout a photo of your station?

male connector on the cable to adapt the BNC connector on the radio. Most radio stores stock this adapter or can obtain it for you. It essentially will turn your pocket scanner into a base scanner. Many people already do this. Join the ranks; you don't need separate base, mobile and handheld scanners. A handheld can perform all three functions!

Eric Sponauer of Tampa, Florida, passes along frequencies used in his city:

Tampa police 453.800, F-3, information; 453.850, F-4, emergency; 453.750, F-5, north end; 453.875, F-6, tactical; 453.325, F-7, car to car; 453.500, F-8, car to car.

Tampa fire/EMS 154.430, fire F-1; 154.220, fire F-2; 155.220, EMS F-1, dispatch; 155.325, EMS F-2, ambulance to hospital.

Tampa news media 450.450, WXFL,

Channel 8; 450.150, WTVT, Channel 13; 450.0875, WTOG, Channel 44; 450.1875, WFLA; 450.350, WTVT, Channel 13; 170.150, WTSP, Channel 10; 173.375, Tampa Tribune.

Eric says he uses a modified Realistic Pro-2004 with an ICOM A7000 discone on a 40-foot mast at the base and a Realistic Pro-32 scanner in his truck while driving around.

George Q. Wilson of Eldorado, Illinois. The Illinois Division of Criminal Investigation uses 154.905 statewide. However, their convert operations frequency for mobile use is 154.950. The Illinois Office of State Marshal Division of Arson uses 155.460. The Department of Corrections operates three prisons, tow work camps and a youth corrections center on 453.875 with a repeater and can be heard almost anywhere in southern Illinois. The Illinois Department of Conservation uses two repeater frequencies: 151.445 for fires and 151.280 for enforcement. The federal penitentiary at Marion, Ill., can be found on 170.875 and 170.925, while the Shawnee National Forest headquarters in Harrisburg, Ill., can be heard on 164.825 with a repeater. In addition, Kee-McGee Coal Co. uses 452.125 and 151.955, while Amax Coal uses 461.025. Thanks for the good list of frequencies, George!

We're interested in hearing what you're



Here's John Myers, KWA7CH, in a moment away from his nifty monitoring post.

hearing on your radios. Tell us about any special frequencies you've heard. We also welcome your questions, comments, frequency lists and photographs. You can

write to me at: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. **PC**

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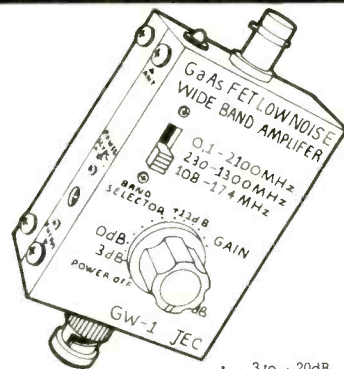
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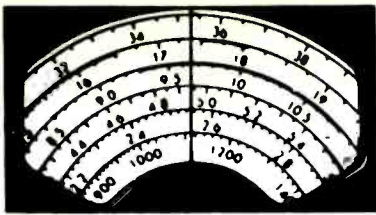
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COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Gary Hamlin, NY writes "One of the more interesting things I've ever heard on the radio was one evening between 0000 and 0430 I followed the Coast Guard and Customs as they tracked a tugboat and six smaller vessels off the east coast of Florida. They eventually caught up with the tugboat and found 5000 lbs. of marijuana on board! One of the smaller vessels was also caught near Ft. Meyers, FL. It was fascinating to follow the operation from beginning to end."

The latest on USN activity monitored by Andy Gordon, CT indicates he has been regularly hearing the USS Tennessee, SSBN734, on 2716 kHz. The Tennessee has been using various alpha numeric call-signs when working Canaveral Control. Calls noted include B7W, 4PF, X9C, 5EU and 5XO. Andy also said he has concluded that USN ships in the Atlantic have abandoned 4066.1 kHz for phone patches through Norfolk ISCB at NAVCAMSLANT. His guess is that the circuit was replaced by SATCOM. The cruise ships of Carnival Lines which operate on 4066 kHz make it impossible at times for USN ships to use 4066.1 kHz. Thus far, Andy notes that USN ships calling San Diego CSS1 seem to be unaffected by the QRM caused by the cruise line vessels.

Another QSL address was provided by Patrick O'Connor, NH. CCGS Henry Larsen, c/o Dartmouth CG Base, PO Box 1000, Dartmouth, NS B2Y 3Z8, Canada.

First time contributor, Victor Balogh, Ontario, Canada uses a Kenwood R-5000 with an MFJ 1020A Active antenna along with a Gessy preamp and Various homemade long wires and dipoles. His main interest is the monitoring of "Spy Numbers."

A report from Simon Mason, England stated "I have been picking up Spanish 5F stations here with excellent signal strengths lately. I don't normally hear these often but when I do they are very early in the morning here (0400-0900 UTC). They are obviously ten-a-penny on your side of the ocean but unusual to my ears. Very good reception was noted on 7550 kHz at 0600 on AM and also on 7527 kHz at 0700."

When not at home, Dennis Vaughan, LA monitors from aboard ship and furnished some loggings made during a trip from Dubai, United Arab Emirates to New Orleans, LA. Welcome to the column Dennis and we look forward to additional intercepts made during your voyages.

Garie Halstead, WV monitored three



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Dear Mr. Kneitel:

We occasionally receive mail from DX'ers in the U.S.A requesting confirmation of H.F reports made to our Flight Operations Office in Barbados by company aircraft operating to/from Barbados and the United Kingdom.

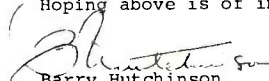
For those readers who may be interested, the following information is applicable to our operation :-

Company	CARIBBEAN AIRWAYS
Base	BARBADOS
Postal Address	Terminal 1, Grantley Adams Int. Airport, Christ Church, Barbados
Assigned frequencies	6526 8945 13260 17485 17910 USB.
Equipment	Transceiver - SGC 714 / 500w . Secondary receivers - Kenwood R5000 (2) Transceiver antenna - 35' whip/AMU. 90' broadband dipole for secondary receivers with Palomar Preamplifiers.

Primary frequencies are 17910 1300 - 2100 hrs UTC
6526 2101 - 1259 hrs UTC

Traffic may be heard mostly on weekends Saturday to Monday during daylight hours.

Hoping above is of interest.

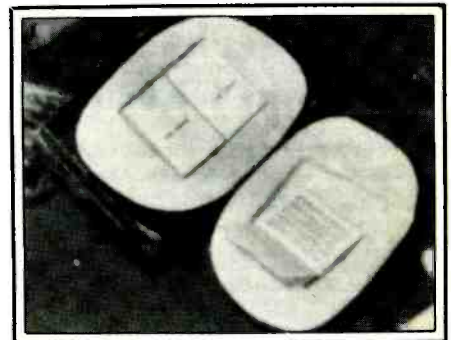

Barry Hutchinson
Flight Operations Manager

POP'COMM received this informative letter from Barry Hutchinson, the Flight Operations Manager of Caribbean Airways.

Soviet Aeroflot flights down the usual eastern seaboard route (Sable Island-Brunz-Daner-Jesse-Elbow-Nassau-Tania) on the day of Gorbachev's arrival on his Cuban visit. All of these Aeroflot flights and flight numbers that would indicate possible VIP aircraft.

Aircraft Registration	Aeroflot Flight	Havana Landing Time
86467	4127	2025
86468	4109	2155
86540	4115	2240

Garie explained "All of the above aircraft were copied on CQ on 15024 kHz and were heard working RFNV (Moscow) or COL (Havana). They were flying fairly close together (1½ hours between 4127 & 4109



Simon Mason, England sent in this photo of the soap bar hiding place of a one-time pad discovered upon the arrest of a Czech Spy. The arrest was described in the column last month. The photo appeared in an unidentified British newspaper.

COMPANY OPERATIONAL CONTROL FREQUENCIES - HF USB

USE TO "PHONE PATCH" OR "RELAY-TO-COMPANY" OPERATIONAL MESSAGES OR DIVERSION ARRIVAL/DEPARTURE REPORTS. HF STATIONS HAVE TELEPHONE NUMBERS FOR 24 HR PATCH TO FTW DISPATCH; GSW & TUL MEDICAL OFFICE & HOME); TUL MOC AND TRCH. SERVICES.
IN INITIAL CALL GIVE COMPANY/FLIGHT NUMBER/COMPLETE HF FREQUENCY/LATITUDE & LONGITUDE DEGREES. ALLOW AT LEAST 30 SECONDS FOR RESPONSE. REPEAT CALL 2-3 TIMES BEFORE USING NEW FREQUENCY.

WEST OF 30W

"NY ARINC" 3494 6640 11342 13330 17925 21964

EAST OF 30W

"SPEEDBIRD LONDON" 5535 8921 10072 13333 17922 21946

"STOCKHOLM RADIO" 5541 8930 11345 13342 17916 23210

"BERNA RADIO" 4654 6643 10069 13205 18023 (21988 23285-04002 TO 22002).

3010 8936 15046 25500 AVAILABLE ON REQUEST FOR BETTER COMMUNICATION OVER CENTRAL EUROPE.

15835 MAY BE USED DURING PERIODS OF CONGESTION ON 13205 OR WHEN 18023 IS NOT USABLE.

ACCOUNT UNPREDICTABLE NATURE OF HF, ARINC MAY BE USABLE EAST OF 30W AND SPEEDBIRD/STOCKHOLM/BERNA WEST OF 30W. DEBRIEF UNSUCCESSFUL CONTACT ATTEMPTS ON FLIGHT DEPARTMENT HOT LINE.

SEE JEPPESEN PAGE AT-21 FOR AIR TRAFFIC CONTROL HF FREQUENCIES.

TO ENSURE EXPEDITIOUS RECEIPT OF COMPANY RADIO MESSAGES ALL FLIGHTS ARRIVING/DEPARTING THE CONTINENT OF EUROPE MUST ESTABLISH AN HF SELCAL WATCH AS FOLLOWS-

FLIGHTS INBOUND TO STATION ON THE CONTINENT - AFTER CROSSING 20W WHEN HF RADIOS NO LONGER NEEDED FOR OCEANIC CONTROL, CALL BERNA (BERNA RADIO) ON HF, USE 4654 OR 6643 (USE HIGHER FREQUENCY IF NECESSARY). UPON CONTACT, ADVISE BERNA YOU ARE MAINTAINING SELCAL WATCH ON THEIR HF FREQUENCY UNTIL ARRIVAL. NO NEED TO SIGN OFF SELCAL WATCH AFTER ARRIVAL.

FLIGHTS OUTBOUND FROM STATIONS ON THE CONTINENT - WHEN ACCOMPLISHING HF SELCAL/VOICE CHECK WITH (BERNA RADIO) PRIOR TO DEPARTURE, ADVISE THEM YOU WILL MAINTAIN SELCAL WATCH ON THEIR FREQUENCY UNTIL APPROACHING OCEANIC GATE. NO NEED TO SIGN OFF WATCH. PRESELECTION OF (BERNA RADIO) FREQUENCY WILL ALSO EXPEDITE ANY RADIO PATCH MESSAGES FROM AIRCRAFT TO FTW DISPATCH.

Telecoms Headquarters
Concorde
31, Exeter Road
Singapore 0923
Republic of Singapore

Telephone: 7343344
Telex: RS 33311
Telegraphic Address: Telecom



Telecoms

Date: 15 Aug 88 Your Ref:
Our Ref: ZOE/R5/02/01

Mr Milan Seifert

Dear Sir

RECEPTION VERIFICATION QSL

Thank you for your report on Singapore Radio transmission.

2. We are pleased to hear from you and listed below are details of our transmission :-

TYPE OF SERVICE : MARITIME TELEGRAPHY
FREQUENCY/CALLSIGN : 12659.5 KHZ/9W 3T
TYPE OF EMISSION : A1A
TYPE OF TRANSMITTER : RACAL TA 184
POWER OUTPUT : 10 KW PEP
TYPE OF AERIAL : QUADRANT
SCHEDULE : 0000 - 1500 UTC
CLOSING TIME MAY BE
EXTENDED UPON REQUEST.

Thomas Wdo
for Engineer (Frequency Management)
regulations & Licensing Dept

J. Thomas, TX provided this frequency information from the American Airlines Flight Manual.

Singapore Radio sent this QSL letter to Milan Seifert, Korea.

and 45 minutes between 4109 and 4115). There were occasional transmissions in SSB (in Russian) also during the flights on this frequency. It is my belief that the middle aircraft (4109) was the one with General Secretary Gorbachev aboard. I am basing this on his arrival time. The arrival time of 2155 coincided with CNN's live coverage of the Gorbachev arrival in Havana. On the day of the General Secretary's return to London, I heard Aeroflot 4110 which I suspect was probably Gorbachev's. It has been my experience the flights into Cuba use odd flight numbers and flights out of Cuba use even. So 4109 in and 4110 out makes sense. It appeared however the Gorbachev was using a different aircraft. When I heard the air-

craft report over Jesse at 1445 and estimating Daner at 1540, the registration number of 86712 was given. At 1552 COL advised 86712 to Work Moscow on 13220 kHz where Russian voice transmissions (SSB) were heard. I am very anxious to see if any other contributors heard these aircraft on any of the normal voice circuits working Gander or New York Oceanic and how the information compares. This would be very interesting indeed." Thanks so much Garie for the information. Let's see if others observed the activity.

From Australia we had from Stephen Reakes who had a question about a "Spy Numbers" transmission. Stephen, the traffic you heard was sent in "Cut Numbers" which is a system whereby digits are sent in an abbreviated form thus requiring less time in passing traffic.

One of the simple systems is where just the zero is sent cut as the letter "T" while other systems may have all of the digits sent in cut fashion. The particular system you observed was AUV4E6BDNT which equates to 1234567890. (See logging for 14391 kHz)

Stephen told of one instance where "A CW station came up with a short message just before the start of normal transmissions. I missed most of it but did catch that the message was directed to VA4 because it repeated VA4 a number of times at the end of the message and signed GYPSY.

Stephen indicated he has been a ham operator for the past ten years. Equipment used for SWL loggings was a Kenwood TS-430 with a Telereader CWR-670E.

Mark Winans, IL described his receiver as a "Hand-me-down" Heath GR-81, probably from the early 60's. He has a dipole installed above the false ceiling in his apartment.

Gerard Hooten, NY related the following incident: "At 0752 UTC on 9435 kHz I can across a YL/SS with 5F groups. This frequency is where I usually locate *The Voice of Israel*. The YL/SS operator had verbal tone and type of accent like that of an Israeli. At 0757 the numbers ceased and the carrier remained. The carrier then slid from 9435 kHz down to 9430 kHz with the announcer calling 'Attention Cero Seis Uno Ocho Cero' and 0810 the numbers ceased and again the carrier remained briefly. At 0825 the carrier slid back up to 9435 KHz but then disappeared. Not only did the announcer sound Israeli but the signal was just as strong. Could there be a connection here?"

The mailbag often contains queries from readers requesting clarification of communications definitions. The most frequently ones asked for are the terms cipher, code and utility. For the first two we turn to no less an authority than Mr. Crypto, Williams S. Friedman, who included definitions in each volume of his "Military and code are often

QSL

Date: 27 JULI 1988

Heure: 0813 UTC

FREQUENC: 4054 KHZ

Le Major Radio LE GUILLOU
Chef de Station
Pointe des Sables

Station Radio Pointe des Sables

Here is a QSL received by Bob Combs, CA.

interchanged yet they do refer to two separate and distinct methods of converting plaintext to an unreadable form.

CIPHER SYSTEM—Any cryptosystem in which cryptographic treatment is applied to plaintext units of regular length, usually monographic or digraphic.

CODE SYSTEM—A cryptosystem in which arbitrary groups of symbols represent plaintext units of varying length, usually syllables, whole words, phrases and sentences.

A simple example would be where the phrase "TOMORROW WE WILL _____" could become VFNPS SPXXF XJMM . . . in a cipher system whereas in a code system the phrase might appear as the group ABCDP or as a pronounceable word such as CANDY.

UTILITY STATION—Everything other than Broadcast Band, International SW Broadcast, Citizens Band, and ham transmissions.

The mailbag was again overflowing this month and I want to thank all who contributed. The more contributions we have, the greater the variety. Keep it up. And now let's look over the loggings.

**Ute Intercepts
All Times Are UTC**

212: Beacon AWW, Randolph County Apt., Winchester, IN at 0843; Beacon JX, Reynolds Fld., Jackson, MI at 0848 (Symington, OH).
266: Beacon IN, Indianapolis, IN at 0825 (Symington, OH).
273: Beacon ZV, Sept Iles, PQ at 0449 (O'Connor).
275: Beacon RI, Thetford Mines, PQ at 0452 (Pat O'Connor, NH).
295: Beacon BDA, Gibbs Hill Light, Bermuda at 0412 (O'Connor, NH).
306: Beacon R, St. Johns Lt., FL at 0420 (O'Connor, NH).
323: Beacon BSD, St. Davids Head, Bermuda at 0430 (O'Connor, NH).
329: Beacon IWH, Wabash, IN at 0752 (Symington).
353: Beacon QG, Windsor, ON at 0732 (Symington, OH).
370: Beacon AZ, Kalamazoo, MI at 0724 (Symington, OH).
391: Beacon CPB, Culver Mil. Academy, Culver, IN at 0708 (Symington, OH).
515: Beacon OS, OSU/Columbus, OH at 0858 (Symington, OH).
521: Beacon GF, Cuyahoga Co. Apt., Cleveland, OH at 0900 (D. Symington, OH).
524: Beacon HEH, Newark, OH at 0901 (Symington, OH).
2182: CGH/L, CCGS Henry Larsen in USB at 0413 wkg Stephenville CG Base. This is a new icebreaker (O'Connor, NH).
2660: CZFX, HMCS Saguenay (DDH-206) clg Shearwater Military in USB at 0015 (Andy Gordon).
2716: HMCS Ojibwa (SS-72) wkg QHM Halifax at 2315; CZNJ, HMCS Margaree (DDH-230) wkg QHM Halifax at 0915 advising the helo couldn't rotate due to fog & sea condx; Mike 213, un-ID sta (possible helo) asking for radio check from any sta; NIQC, USS McCandless (FF-1084) using ID F5A clg Roosevelt Roads PR Navsta but that sta doesn't guard this freq; NOKM, USS Shark (SSN-591) using ID of 5PF clg 3IL (Canaveral Control) at 1100 with ETA info at Buoy 3; NDIK, USS Miller (FF-1091) clg Lakehurst USN Engineering Center at 1155; USS Philippine Sea (CG-58) wkg Newport Port Control at 1055; NNBD, USS James K. Polk (SSBN-645) using ID UID wkg B7F (Canaveral Control Dockmaster) at 1000 w/req to enter harbor & obtain pilot; Papa, an un-ID sta, calling Alpha Victor at 0930, since these aren't regular USN tactical types, my guess is that these are Autec stas (Gordon, CT).
3130: 4HG & others, USB at 0322 w/comms radar tracks. Command control here is Sealord (USN Facsfac, Jacksonville, FL). Also noted Giant Killer (USN Facsfac, Virginia Capes, VA) active on 4373 kHz at same time (Fernandez, MA).
3840: YL/EE in AM-mode at 2130. Mossad (Charret, FRG).
4030: YL/Bulgarian in AM-mode at 0337 w/5F grps, each X2 ending at 0340. Then 3 pairs of digits

fall by another (or same) msg at 0341 (Fernandez)
4134.3: USCGC Conifer (anchored in Santa Barbara harbor) wkg USCG CAMSPAC San Francisco in USB at 0704. QSL 4428.7 kHz (Sabo, CA).
4410: YL/EE in USB at 0945 w/comms re shipping info, times, loads, dir of travel. Mentioned Ohio River. Also hrd Halifax CG at 0908 re downed a/c asking any vessels in area to assist. Gave loc & ELT info. Said HF freqs they monitor are: 4115.7, 6212.4, 8263.2, 12367.2, 16469.3 kHz (Cafferky, MA).
4425: YL/Serbo-Croat in AM-mode w/5F grps at 0730 (Charret, FRG).
4722/11200: RAF w/British aero wx, USB at 0232 (Hamlin, NY).
4916: L0D & N4N w/talk re RTTY & "Little Grey Lady," USB at 0445 (Sabo, CA).
5015: YL/GG repeating Xray Lima at 2000-2005 in AM-mode, then 381 46 Gruppen & 427 41 Gruppen & into 5F grps. 1st time Xray used by these stas (64 2L stas logged, only Quebec not yet hrd) (Mason, England).
5080: Plead Control, USN Pt. Mugu, CA wkg X8V in USB at 0800 (Sabo, CA).
5306: Beacon P sent every 1.5 secs, tuned 0405 (Fernandez, MA).
5315: YL/GG repeating 326 (X3) 95386 59 from 1900 for 5 min in AM-mode, then 5 dashes & into 5F grps (Mason, England).
5547: KMA7, San Francisco Aeradio, CA wkg Continental 10 in USB at 0317 for pos rpt (Szalony, CA).
5580: YL/RR rptng Edno Dvoytze Edno (mil style RR) 1-2-1 in AM-mode at 2230, then Norma 69 Gruppi 13 & into 5F grps. Rptd 121 (X10) then rptd text. Ended w/000 (Mason, England).
5616: New York in USB at 0237 wkg Olympic 412 & giving a VHF freq (Symington, OH).
5643: New Zealand 1 to Tahiti; Continental 1 to Nandi w/pos rpts, USB 0957 (Sabo, CA).
5696: USCG SAR ops re MV Star of Alexandria from 2300. CG a/c 1500 & 2221 stayed on scene to 0100 when both returned to Otis AFB. Patch made at 1500 to Elizabeth City CGAS, NC (Maison, MA).
5750: YL/GG in AM-mode at 2000 clg 719 & 1-0 count (Charret, FRG).
5880: YL/GG rptng 774 (X3) 1 from 2000-2005 then Achtung 120 53 120 53 & into 5F grps. Off w/000 000 Ende (Mason, England).
6200: WPGK, MV Sealord Navigator in USB at 0530 wkg CAMSPAC San Francisco (QX5 6506) w/msg to Plebe Control re entering Cap Missile Test Range; NODU, USCGC Sedgwick w/c to CommSta Kadiak (QX5 6506) in USB at 0625 (Symington, OH).
6201.5: 3G to 7R w/tfc re comms w/45 & 83 in USB at 0419. Also hrd stas 9F, 16 & 57 (Sabo, CA).
6309: JPBW, stern trawler Takachiho Maru at 0333 wkg NMC re loss of drag net (McDonald, BC).
6577: KEAS, New York Aeradio getting pos rpt from American 392, USB at 0254 (Szalony, CA).
6616: OM/RR sounded like Naval HQ reading instructions containing many #'s. Format similar to British Architect on 5500, etc. Reg sked noted (Mason, England).
6637: Air France Paris Radio in USB w/OM's in FF re flt plans at 0502 (Balogh, ONT).
6761: OM/EE in AM-mode at 0545 w/4L grps (McDonald, MO); Griff 02. -03, -04, -05 in USB, all in contact w/Strato Control via Kiwi Bird re ECM training mission at 0200. Another day hrd Equip 64 via Bell Loop tell Cow Poke he was shutting down #5 engine due to high oil temp then returning to Carswell AFB, at 0452 (Willmer, MI).
6782: YL/SS w/5F grps for 788-125 at 0904 (Cafferky, MA).
6785: YL/GG w/1-0 count & 903 (X3). Was //5415 & 5880 kHz. After 10 tones, Gruppen 211 & into 3/2F grps (Mason, England).
6802: YL/SS in AM-mode at 0415 w/4F grps (Balogh, ONT).
6830: Acrobat (Andrews AFB) w/patches for Canary Seed Brava at 0211, USB (Burns, VA).
6840: YL/EE in AM-mode had 3/2F grps at 2300; YL/SS in AM at 0230 w/4F grps; Israeli Mossad YL in AM-mode w/EZ12 & into phonetics at 0200 (Hamlin, NY).
7375: YL/GG in AM at 0914 had 3/2F grps (Charret, FRG).
7404: YL/GG w/Papa November & piccolo tones then into 5F grps at 0634, USB (Balogh, ONT).
7467: Various ops in USB incl Foxtrot, Kilo, PT & FT w/references to Giant Killer & Alligator Playground at 0217. Pass alt freq for Oceana Facsfac? (Hamlin, NY).
7482: YL/SS w/5F grps for 648-50 at 0859 (Cafferky, MA).
7525: YL/SS w/5F grps at 0729; off 0739 (Cafferky, MA).
7527: Atlas wkg Omaha 49 on anti-smuggler Channel ZB, USB at 0215 (Sabo, CA).
7535: NPHC, USS Aylwin (FF-1081) trying to raise Norfolk SESEF at 1920. SESEF means Ships Electronic Systems Evaluation Facility, loc at Ft. Story, VA; NUKU, USS Barnstable (LST-1197) wkg Norfolk SESEF at 1830. SESEF told the ship that ops

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/location
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	with
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)

procedure is "all non-testing comms to be carried out in USB." 1st, each xmtt to be tested in full order: USB, LSB, AM, ISB, CW, & FSK; USS Normandy (CG-60) using ID PCU/Normandy before being commissioned clg Norfolk w/test at 1600. Norfolk Test answers up as Norfolk SESEF & tested 10 diff xmtts in all modes (Gordon, CT).
7555: YL/SS w/5F grps at 0600 for 752-00. Off at 0611 (Cafferky, MA).
7606: VL2, usual Israeli Mossad xmsn in AM-mode w/YL at 0149 (Tom Kneitel, NY).
7879: ONY27, NATO Rouvroy, Belgium in CW at 0155 w/coded tfc (Kneitel, NY).
7886: YL/SS in AM-mode at 0820 w/Atencion 977 07 & into 5F grps (Charret, FRG).
8042: At 0859 tones fall by Atencion 743. At 0902 Atencion 743-155 & into 5F grps by YL/SS. Some hi speed voice as 8107 intercept (Cafferky, MA).
8066: YL/SS in AM-mode at 0634 w/5F grps (Fernandez, MA).
8107: YL/SS w/5F grps at 0605. Sounded as if tape playing too fast. Off 0607. (Cafferky, MA).
8120: YL/EE w/1-0 count & 971 (X3). After tones, group count 126 & into 4F grps. Never ant 5F grps here (Mason, England).
8186: YL/SS in AM-mode at 0630 w/5F grps (Balogh, ONT); OM/RR in AM-mode at 2101 w/5F grps (Charret, FRG).
8291.1: OM/EE in SSB at 0645 abd F/V Don Pepo off NE coast of Cuba saying vessel being fired upon by Cuban naval vessel. Many comms w/USCG Miami. He followed Cuban vessel into Cuban port, was told by USCG that it happens quite often, to remain calm, do as they say (Vaughan, W. Atlantic Ocean).
8445: 9PA, Banana River, Zaire w/VVV marker in CW at 0425 (O'Connor, NH).
8484: YL/SS in AM-mode at 0734 w/5F grps (Balogh, ONT).
8545: DZF, Manila R., Philippines clg CQ in CQ at 1440 (Lesnick, ONT).
8568.3: XFM, Manzanillo Calimas R., Mexico clg CQ in CQ at 0443 (Szalony, CA).
8718.9: Un-ID USN ship wkg USCG Portsmouth at 2000 w/patch to USN Commander stateside re weapons system malfunction. This freq so close to 8719 kHz used by USN salvage units clg COMSUPRON 8 that they constantly step an one another (Gordon, CT).
8719: NIGP, USNS Apache (T-ATF-172) wkg COMSUPRON 8at 1315 w/rdo check; NQTN, USS Fortify (MSO-446) at 1150 advised COMSUPRON 8 re departing Charleston enroute Little Creek; NADQ, USS Grasp (ARS-51) & NTWX, USS Hoist (ARS-40) at 2320 wkg COMSUPRON 8 assigned to assist USS Iowa (BB-61); COMSUPRON 8 wkg several units including: NIXR, USS Powhatan (T-ATF-166), & NIGP, Apache, Ordered to Key West Operating Area (KWOA) to aid USS Trippie (FF-1075) after their collision w/US Platte (AO-186). All comms USB 2100-2300 (Gordon, CT).
8846.1: American 659 clg New York at 2346 (Giglio, PA).
8850: YL/SS in AM-mode at 0400 w/5F grps (Hamlin, NY).
8861: OM/EE in USB at 0248, UN a/c w/Dakar R. asking re HF freq for Canary Islands R. & told it was 3442 or 6539 kHz (Vaughan, Canary Islands).
8912: Anti-smuggling ops from Home Plate (US Customs), River City, Slingshot, Swordfish 47, Omaha 17, -35, -52, Nightstalker 64, Shark 003. USCG a/c (Omaha ID's) tracked tugboat & 6 small vessels 0000-0430. Tug & 1 other vessel intercepted & narcotics found aboard (Hamlin, NY).
8976: A/c 227 in USB at 0726 wkg Cow Pasture w/advisory re normal ops (Sabo, CA).
8983: A/c Nedsat (or Medsat) in LSB at 1116 wkg 7L1 w/rdo check. The a/c wkg 7L1 & 08K w/2L grps (Meyer, FRG).
8984: CG a/c 1500 & 2221 assisting in rescue of tanker Star of Alexandria. Comms noted all day to

HAM RADIO IS FUN!

It's even more fun for beginners now that they can operate voice and link computers just as soon as they obtain their Novice class license. You can talk to hams all over the world when conditions permit, then switch to a repeater for local coverage, perhaps using a transceiver in your car or handheld unit.



Your passport to ham radio adventure is TUNE-IN THE WORLD WITH HAM RADIO. The book tells what you need to know in order to pass your Novice exam. Two cassettes teach the code quickly and easily.

Enclosed is my check or money order for \$19.00 plus \$3.50 for shipping and handling or charge my

() VISA () MasterCard () Am. Express

Signature _____

Acct. No. _____

Good from _____ Expires _____

Name _____

Address _____

City _____ State _____ Zip _____ PC

THE AMERICAN RADIO RELAY LEAGUE
225 MAIN ST.
NEWINGTON, CT 06111

2000 then shifted 5696 kHz. Rescued 23 persons w/2 not accounted for (Maison, MA).

8989: USN a/c LY-233 clg McClellan Airways at 0200, also on 13201 kHz. Patch to Whidbey Isl Meteor for wx. A/c is Lockheed P-3C Orion land based ASW patrol craft (Gordon, CT).

8997: A/c 95 Outer Space in LSB at 0106 wkg McDill req forklift & power unit for load he had aboard. At 0027 a/c Boomer clg 24Y & much tracking info passed. Boomer then asked if he was receiving the ping-pong xmsn. He was & if he completed the XAO & XAP then asked to switch to Alligator designator (Meyer, FRG).

9017: Desirable clg Deterrent, USB for radio check at 0002 on freq X904 (Hamlin, NY).

9023: NORAD stas Six Pack, North Star, Babe Ruth, Huntress, etc. in USB at 1350 in comms re exercise (Fernandez, MA).

9025: KC-135 a/c gave alt & heading info, LSB at 2252. Also said "Fishnet"?? (Pruner, CA).

9027: Various OM's & YL's in USB using ID's like Alley Oop, Dignatory, Gatepost & Gunboat w/phonetic alphanumeric strings at var times between 2000-0500. Also intercepted on 6750, 8967, & 17975 kHz, all USB (Hamlin, NY). Probable SAC Skyking (Emergency Action Messages) bc'-- Ed.

9043: Beacon K at 1437 (Szalony, CA).

9237.7: YL/SS in AM-mode at 1100 w/5F grps. Actually sounded better on LSB (Cafferky, MA).

9274: YL/EE in AM-mode at 1902 clg 496 & 1-0 count (Charret, FRG).

10005: OM/EE in USB clg Lima Oscar Uniform (X3) & Delta (X3) at 0416 (Vaughan, Canary Isls.).

10125: YL/EE (Asian accent) in AM-mode at 1413 clg CIOX-3, then 725-080024255 (Vaughan, Persian Gulf).

10460: YL/GG in USB at 1635 w/5F grps (Charret, FRG).

10610: YL/SS in AM-mode at 1931 a/Atencion 693-80 & into 5F grps at 1933 (Bob Margolis, IL).

10644.5: Beacon F at 1433 (Szalony, CA).

10735: YL (assume EE-- Ed.) in AM-mode w/5F grps at 0710. Was a contin tape w/mic noises & OM prompting the YL at end of 1st bc, then some thing hid when repeated 0725. Much background noise & n x (w/echo as if in distance) heard. Both xmsns incl several texts w/Atencion Atencion between each. Voice sounded like same one on 10865 kHz another date (Fernandez, MA).

10780: MAC 955 in USB at 1855 advising Antigua R. estimating blocks at 2115. Antigua then gave wx (Burns, WA).

10820: YL/EE in AM-mode at 0814 had 3/2F grps (Sabo, CA).

11165: Un-ID sta in AM-mode sent 4 long musical tones iptd till 0505 the 1 long tone, many short tones in rapid succession, fall by off 0506 (Fernandez, MA).

11179: Titanium in USB at 0409 wkg Command Center via Hickam AFB GCCS (O'Connor, NH).

11214: Publisher Alpha clg Raymond 24 (Tinker AFB) but no reply, then called Trenton Military asking for patch to Raymond 24 re status of a tanker. Tanker (RIT22) is in the green. USB at 0246 (Burns, VA).

11239: MAC255 a/c in USB at 0135 w/patch via McClellan AFB (Lesnick, ONT).

11243: Shopper to Ditty Bag, USB at 1628 w/freq request but no contact (Golladay, WA).

11255: SLF clg 6UR & H4K in USB at 0149 (Hamlin, NY).

11282: KMA7, San Francisco Aeradio getting pas rpts from Japan Air 66 & Qantas 101, USB at 1535 (Szalony, CA).

11396: NY Aeradio in USB from 1421-2156 wkg a/c including Air Canada 080, TWA 12, World 8270, Clipper 227 (Lesnick, ONT).

11494: Anti-smuggler ops by Slingshot wkg a/c 09 at 1241, tally ha at 1249, USB (Sabo, CA).

11532: YL/SS in USB at 1722 w/4F grps (Burns)

12063.8: Un-ID sta w/5L grps in CW at 2134 (Margolis, IL).

12156: YL/SS w/4F grps in AM-mode at 1832 & end 1833 (Margolis, IL).

12541.7: UIFJ, Soviet bulk carrier **Alexandr Savelliev** in CW at 0020 wkg UFB; UYSJ, gen cargo ship **Giuseppe Di Vittorio** in CW at 0150 wkg UFB (McDonald, BC).

12548: ELAX7, Liberian bulk carrier **Cobalt Island** in CW at 2203 clg SVB (Margolis, IL).

13181.3: YL/EE in USB at 0520. Sounded like practice Skyking bc's & YL op was having trouble reciting alphanumerics (Fernandez, MA).

13204: SAM974 tells Andy neg copy 26000 on 315 lower. Andy tells 974 that 26000 will meet them this freq, but 974 still can't copy so switch to 6812 upper. Still no luck in USB at 1743. At 1843 Andy has patch for 974 (Burns, VA).

13247: Backcourt & Lionweed in USB in net w/Lancelot, Nicholson, & Impurity on Whiskey 109 freq. Nicholson was airborne at 1505 (Willmer, MI).

13305: Israeli a/c 386 on flight to ROM said he had trouble in luggage compartment, would contact maintenance on arrival. OM/HH in LSB at 1025 (Meyer, FRG).

13342: Stockholm wkg Evergreen 816, USB at 0740 (Sabo, CA).

13386.5: KKN39, Washington (or wherever) in CW at 0442 w/marker (Szalony, CA).

13390: YL/EE w/1-0 count & 383 (X3), AM-mode 2200. 1st hrd 12/87, since then on 5415, 6340, 6875, 7860, 8175 at var times. Every time after 10 tones, no msg follows & carrier left on for some time (Mason, England).

13415: PCW1, MFA The Hague, Holland w/ID marker in CW at 0446 (Margolis, IL).

13826: Mobile shoresta wkg off of USNS Harkness (T-AGS-32) using MARS call NNNOCXO1 wkg NNN0FMN. The MARS sta abd the ship also running patches thru FMN taking turns w/CXO1 (Gordon, CT).

13826.5: UQCD, un-ID Soviet (presumed naval) vessel clg RIV in CW at 0032 (Margolis, IL).

13878: OM/EE in USB w/countdown & announcements "We have launch," & "Mach 2: at 3 minutes" at 2132 (Hamlin, NY).

13993: AGA40, Goodfellow AFB wkg AGA6TR w/1fc at 2051; AGA2MD, MacDill AFB wkg AGA3HQ & asking for permission to secure at 2112 (Symington, OH).

14391: At 1250 time pips then 3 long ones, then started in CW to call VA4 (714) in cut #'s. About 0105 began text. Some text sent on 10 dates, call then changed to UDU (282) w/new text (Reakes, Australia).

14393: Palestine Liberation Org (PLO) comms, LSB at 1135 from Tunisia in AA clg stas within Arab nations. Stas 12, 15, 20, 29, 42, 67, & 69 called by 07 & 44A. Msg #17, 155/M from Tunisia asking names & ID data, etc. of persons to attend conference on the "Intellectual aspects of INTIFADA" urgent last date of participation also given. Xmsn ended 1153 (Meyer, FRG).

14441.5: NHW1, USS Racine (LST-1191) (not assigned a MARS callign) simply ID'ing as Racine wkg NNN0NUW. Also, Racine had no hams aboard so they couldn't pass routine patch t/c (Gordon, CT).

14463.1: US Army MARS in USB at 0330, ACM6USC wkg AA T9VE (Sabo, CA).

14470: Shore party from USNS Chauvenet (T-AGS-29) ID'ing as NNNOCQG/Remate wkg NNNOPRQ at 0015. Her sister ship, USNS Harkness, does similar w/NNNOCXO1, -2, & -3 as shore party ID's (Gordon, CT).

14475.7: Beacon U at 0021 (Szalony, CA).

14487: OM/EE in USB at 2000 & 0400 sending 3/2F grps. This is a MARS freq & the #'s xmsns sometimes run along w/MARS ops (Hamlin, NY).

14562.8: YL/SS w/5F grps in AM-mode at 1700 (Margolis, IL).

14686: OM/EE in SSB at 0507, Atlas anti-smuggler sta w/patch for Ambush, but apparently gave wrong LL #'s twice, wake up wrong party!! (Vaughan, Mid-Atlantic).

14968: CMU967, Soviet Navrod, Santiago, Cuba w/5F t/c in CW at 1245 to ships (Margolis, IL).

15015: Army 51270 in USB at 2252 wkg Albrook w/patch to Base Ops (Symington, OH).

15024: Soviet Aeroflot 4109 (A/c reg #86468) in CW at 1923 wkg COL w/pas tpt over Brunz (N Atlantic off NJ coastline). Indicated in RR that was ETA Jesse at 2023. Thought to be General Secretary Gorbachev's flight on recent Cabon visit (Halstead, WV).

15867: Sunshine (YL) wkg un-ID sta re mechanical problems, USN at 0102. This is anti-smuggler ops Channel ZE (Sabo, CA).

16463.1: Var RN warships wkg Portishead R., included GWOJ, HMS Brilliant (F-90) at 2000; GBBB, HMS York (D-98) at 2023; HMS Birmingham (D-86) at 1846; & HMS Liverpool (D-92) at 1805 (O'Connor)

16862.5: XSV, Tianjin R., PRC clg CQ in CW at 1834 (O'Connor, NH).

17015.5: Beacon D at 1900 every 3 sec (O'Connor, NH).

17015.7: Beacon S at 1901 every 4 sec (O'Connor)

17165.5: CLA41, Havana, Cuba clg CQ in CW at 1332 (Margolis, IL).

17403.6: KKN44, US Dept of State, Montavia, Liberia w/CW marker at 0441 (Szalony, CA).

18019: USN a/c LX-05 in USB at 1927 wkg MacDill w/patch to Glenview NAS (Symington, OH).

20198.3: NASA Houston Control in LSB at 1500 w/landing of Shuttle Discovery. Had live feed from Edwards AFB. Could hear jets, helos, the double sonic booms, crowd cheering, etc. Also comms between Shuttle & Mission Control (Willmer, MI).

20936: USN MARS net, USB at 1917. NNNONRO in Spain wkg NNNONIM (Sabo, CA).

20969.8: CFARS net, USB at 1852 w/VXV9, VXN9, CIW202, VET9, & CIW605. Said this was Foxtrat channel (Sabo, CA).

22698: LPL, Argentina in USB at 1753. YL w/voice mirror & tones (Ross, ONT).

22899: GPA7, England in CW w/call marker at 1746 (Ross, ONT).

23402.5: Anti-smuggler ops w/Atlas wkg 775 via patch, USB at 0321. Said it was Channel Romeo (Sabo, CA).

25389.5: GK Y2, England in CW w/call marker at 1725 (Ross, ONT).

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Paris (PC)—DIPLO news service, operated by the French Ministry of Foreign Affairs since 1965, will cease transmissions on HF radio by the end of this year, it was learned during my recent visit to the ministry.

The news service will be sending copy to 192 French embassies and consulates worldwide by satellites. At the time this column was being prepared, most of DIPLO's transmissions were by satellites. Those transmissions remaining on shortwave radio were being beamed to Africa from Toulouse, France, and to Asia from Noumea, New Caledonia. At the beginning of this year, HF radio transmissions to South America were discontinued as satellite service was begun. Transmissions to Europe and North America have been by satellite for years, according to Robert P. Villet, chief of the Technical Section for the ministry's information and press service, which runs DIPLO.

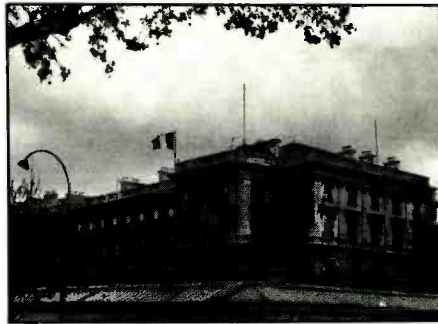
News of diplomatic interest to the French government is gathered by ministry staff in Bonn; London; Moscow; the United Nations headquarters, New York City; Ottawa, Canada; Rome; and Washington, DC. The material is sent by cable to Paris, where it is stored in a computer at the ministry. A staff in Paris also contributes stories concerning the French President and Prime Minister, and the foreign-affairs ministry, as well as a review of press articles from American, British, German, Italian and Soviet Union newspapers.

After the news is compiled and edited, it is transmitted directly from the ministry in Paris to satellite. That which is destined for Africa and Asia is downlinked in Toulouse, France, and sent by shortwave radio to Africa, and to Noumea, New Caledonia, for relay to Asia. Languages used are English, French, and Portuguese. Transmission speed is at 50 bauds and power is 10 to 20 kilowatts.

You have just four months left to view DIPLO dispatches on HF radio. "We will close down shortwave service by the end of 1989," Villet said. Here is DIPLO's HF radio broadcast schedule until the end of the year:

From 0900 to 1200 UTC, FTW91 from Toulouse to East Africa, Indian Ocean, and the Arabian peninsula on 22915 kHz, with news in French and English. From 1200 to 1500, FTS78 from Toulouse to West Africa on 18785, with news in French, English, and Portuguese.

From 0900 to 1500, FTU8B on 20078, and FTQ39 on 16397.5, from Toulouse to the Middle East, with news in French and English.



DIPLO news service transmissions originate from the ministry of foreign affairs, 37 Quai D'Orsay, Paris, France. Note the antennas on the roof. (Photo by Robert Margolis)



No teletype machines to be found here. DIPLO uses a network of personal computers to write and edit news dispatches. (Photo by Robert Margolis)

DIPLO broadcasts to Asia from 0100 to 0440, FTZ7 on 20078, and FZL62 on 16106.5, from Noumea; 0450 to 0835, FZM62 on 16106, from Noumea; from 0900 to 1200, FTU8B on 20078, and FTU31 on 20315, both from Toulouse; and FZM62 on 16106, from Noumea; and 1200 to 1500, FTU8B on 20078, from Toulouse. News is in French and English.

Broadcasts to Oceania are from 0100 to 0400, FZN7 on 20078; FZL62 on 16106; FZL49 on 4930; and FZL91 on 9187.5, all transmissions from Noumea. From 0450 to 0835, FZM62 on 16106; and FZL91 on 9187.5; both transmissions from Noumea. From 0900 to 1205, FZM62 on 16106, from Noumea. News is in French and English.

Those of you who read DIPLO dispatches on your video or computer monitors may recall seeing designations such as "FUN," "FIP," "FOT," and "FWA," between news stories. Villet explained those abbreviations are for the places where the stories are compiled. "FUN" is the United Nations, "FIP" is Paris, "FOT" is Ottawa, and "FWA," is Washington, DC.

My thanks go to Mr. Villet for taking time from his busy schedule to grant me an interview and for giving me a tour of the press facility. He was a gracious host who stood the pain of my use of the French language, which I learned a long time ago in high school, but of which I had no need to speak—until now. The trip to Paris was a personal tour, and not by assignment from POP'COMM.

Back home, Andy Gordon of Connecticut, whose name is usually seen with his loggings in the Communications Confidential section, came to my rescue with an answer to my question about the meaning of "SESEF," found on a RTTY test tape trans-

mission. "SESEF," says Andy, stands for "Ships Electronic Systems Evaluation Facility." The facility, is at Fort Story, Virginia.

"Often U.S. Navy units will bring up 7535 kHz for all mode tests through "Norfolk SESEF," he added. My logging appeared on 16160.5 kHz.

It's great to know that Andy, who doesn't have any RTTY-decoding equipment (Tsk. Tsk), reads this column, anyway. He says that monitoring the U.S. Navy "is my only SWL'ing interest."

Thanks, Andy, and a ribbon of TTY tape to you for your valued assistance.

Say, folks. We need lots more FAX loggings here. You can help us lengthen this section by sending your loggings to the RTTY column, Popular Communications, 76 N. Broadway, Hicksville, NY 11801. Thanks—Ed.

RTTY Intercepts All Times Are UTC Settings= Shift/Baud/Polarity

2676.7: GLD3, Lands Enr R., England at 0152 w/ARQ phasing sig & CW ID (Tom Kneitel, NY).

2805: CCS, Santiago Navrad, Chile w/naval tlc in SS & 5F grps, 850/100R at 0130 (Fred Hetherington, FL). I've long wondered if most Chilean naval comms actually come from Santiago. Chile has 4K miles of coastline which is divided into 3 naval zones. HQ's are at Valparaiso, Talcahuano, & Punta Arenas. None of the 3 show freqs near 2805. Closest xmtr sites to 2805 are CBC, Coquimbo, & CBV2, Valdivia, both on 2806.5-- Ed.

4732: XTU, ASECNA Ouagadougou, Burkina Faso w/coded wx at 0240, TDM 400/96A (Hetherington).

5240: 4JC2, TANJUG Belgrade, Yugoslavia w/nx in EE at 2225, 425/50R (Ed.).

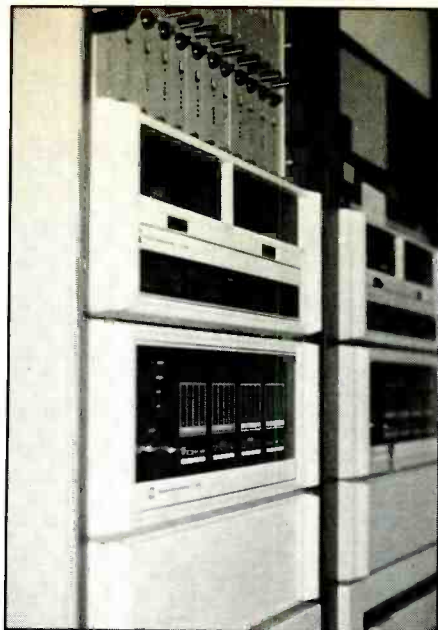
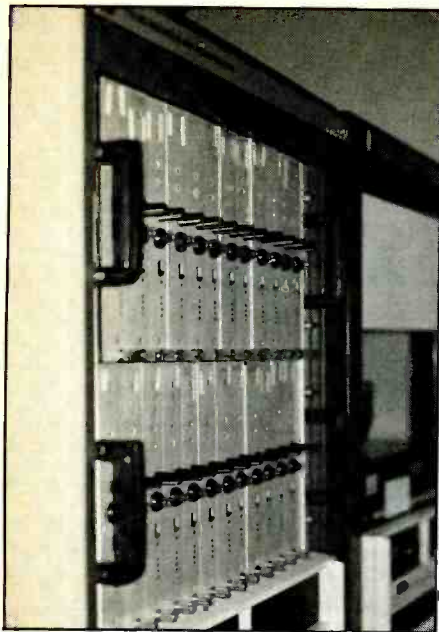
5265: "After many hours & nites of monitoring an idling sta, I finally got something-- encryption!" It was ARQ-E3 850/48 at 0200 (Hetherington, FL).

5421.5: NBTIC, USCGC Aquidneck w/tlc to NMG at 0200, 170/75R. Cutter off NC coast (Michael Ricks, PA). See 7576 kHz intercept-- Ed.

6902.5: NGM, un-ID USN sta w/wx from KWBC, the Nat'l Met Com Center, DC. Was 850/75N at 0349 (Dr. Gary Zaid, WI).

6920: GYA, RN London, England w/faxes & counting at 1020, 850/75R (Hetherington, FL).

6975: 6VU, ASECNA Dakar, Senegal w/RVRY at



Some of the equipment used to store and transmit DIPLO news to satellites. (Photos by Robert Margolis)

Abbreviations Used in The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Connection mode
FF	French
foxes	"Quick brown fox..." test tape
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	news
PP	Portuguese
RYRY	"RYRY..." test tape
SS	Spanish
tfc	traffic
w/	with
wx	weather

0033, 425/50N (J.M., KY). Official callsign here is 6VU38-- Ed.

7542.5: ZEN33, AFB Victoria Isl., Hong Kong w/nx in EE at 1415, 75 bauds (Randall Reese, Thailand).

7576: NBTC, USS Aquidneck w/msg for NMG at 0720, 170/75R (J.M., KY).

7888: Un-ID meteo sta in Mexico w/wx at 0005, 170/50R (J.M., KY).

8069: KMI, Dixon, CA w/test xmsn describing xmtr loc adjacent to VOA & NPG, control point at Point Reyes, N of San Francisco. Was FEC at 1107 (Vallie Miller, TN).

8849.5: CLP1, MFA Havana, Cuba w/crypto after ZZZZ to Embacuba Managua, 75N at 0326 (Ed.).

9024: 3WM38, VNA Hanoi, Vietnam w/nx in EE at 1103, 510/50R (Hetherington, FL).

9072: ZEN40, AFP Victoria Island, Hong Kong w/nx in EE at 1055, 390/75R (Hetherington, FL).

9098: RPFN, Monsanto Navrad, Portugal w/RYRY to RPT1 at 0300, 850/75R (Hetherington, FL).

9193: BAA23, Beijing Meteo, PRC w/coded wx at 1309, 1000/50N (Ed.).

9224.7: NRV, USCG Guam w/unclad msgs to NRT3, ARQ at 1231-1255 (Ed.).

9256: SPK72, SPK Phnom Penh, Kampuchea w/nx in EE & FF at 1110, 500/50N (Hetherington, FL).

9323: RPTH, Portuguese Navrad, Harita, Azores w/RYRY & foxes to RPFN at 0347, 850/75N; at 0350 RPT1, Ponta Delgada, Azores w/RYRY & foxes to RPFN (Ed.).

9330: XVN26, VNA Hanoi, Vietnam w/nx in EE at 1535, 50 bauds (Reese, Thailand).

9435: KRH51, U.S. Dept. of State, London, England w/foxes at 1209, 75 bauds (Ian Wraith, England).

10200: JAE50, Tokyo, Japan w/JP & Jiji nx in SS to S America at 1100, 860/50 (Hetherington, FL).

10235: 3MA99, CNA Taipei, Taiwan w/nx in EE at 1110, 800/50 (Hetherington, FL); CNA w/nx in EE at 1512 (Reese, Thailand). Note that the xmtr site for 3MA99 is shown for this freq at Tienmu, PRC. Part of the 3MA bloc of calls up to about 3MA40 is assigned to Taiwan, but the rest are for PRC. The CNA call for this freq hasn't yet been officially released-- Ed.

10306: FDY, French AF, Orleans, France w/RYRY & le brick at 1645, 50 bauds (Wraith, England).

10319.5: KUNA Safat, Kuwait w/nx in AA at 2015, 350/50N. This is new on this freq so call isn't yet known (Hetherington, FL).

10320: "Dance Floor" was the ID of a sta sending RY's & foxes at 1516, 50 bauds. No idea as to who, what, or where (Wraith, England).

10570: RWH79, Alma Ata Meteo, USSR w/coded wx at 1254, 50N (Ed.).

10580: HMF46, KCNA Pyongyang, N. Korea w/nx in EE at 1556, 250/50R (Ed.).

10590.2: WGY906, FEMA Denton, TX w/foxes to WGY915A, the Nat'l Comms Sys, Arlington, VA at 1348, ASCII 110R. In a return msg, the NCS op

reveals that the FEMA stas are using PC Pakratt software for their TTY xmsns (Ed.).

10700: GKR2, tactical ID of unknown sta w/RYRY tape running in reverse at 1214, 425/50N. Output looked like YRYR CHZ W4(& ED ARQ. Forwards I thought tape wud read QRA DE GKRW ZHC RYRY... until 4 days later when, while monitoring 10900, I saw the GKR2 call, which let me correctly ID this sta here. Smsn here was plagued w/QRM, which GKR briefly mentioned. A long period of silence followed w/just a carrier. After 1316, a few words would be sent periodically & most of those garbled by QRM. The noise continued to increase and all but buried this sta by 1345 (Ed.).

10800: RFL1, French Navrad, Fort de France, Martinique w/controle de voie at 0108, ARQ-E3, 850/48 (Ed.).

10900: GKR2 (see 10700 kHz intercept) w/RYRY at 1108, 425/50R. Sends badly garbled EE tbc at 1111 & goes QRT till 1117. At 1124 comes back on 10899.5, 500/50N w/much stronger sig to send crypto & 5L tfc till 1144 (Ed.).

10955: RFTJF, French Mil, Port Bouet, Ivory Coast w/tfc to RFTJD at 0000, ARQ-E3, 830/48 (Hetherington, FL).

11010: GYA, RN London, England w/freq chart at 0000, 850/75R (Ed.).

11065: YAV25, Kabul Aero, Afghanistan w/coded wx at 0306, 425/50R (Dallas Williams, CO).

11133: BZG41, XINHUA Beijing, PRC w/nx in FF at 1728, 425/50R (Ed.).

11420: FJY5, French Crozet Isls., Antarctica w/RYRY at 0523, then wx for 15 sec & off, 425/75N (Ed.).

11495: RCT55, TASS Moscow, USSR w/nx in FF at 1705, 425/50R (Williams, CO).

11570: NBA, USN Balboa, Panama w/RYRY & SSGS to HDN, 850/75R at 1438. After establishing contact, NBA tells HDN to switch to "fan" on 18990 kHz. Upon checking there, found HDN's OM/SS discussing his RTTY msgs (Ed.).

11600: CLN327, PTT Havana, Cuba w/foxes & counting at 1300, 425/50R (Hetherington, FL).

11638: DDK8, Hamburg Meteo, FRG w/coded wx at 1652, 425/50R (Ed.).

12076: VVD62, Delhi Meteo, India w/wx for Indonesian lacs at 1300, 170/50N (Hetherington, FL).

12173: Un-ID w/5F tfc, 425/50R at 1542. At 1601 w/All QTC 3 QUR SK (Ed.).

12208: "La Prensa" from Managua at 2220, 425/75R (Zaid, WI). Your printout showed this to be the Bulgarian Embassy, Managua w/diplo tfc in Bulgarian to LZG7. The mention of "La Prensa" was only to cite the name of a Managua newspaper from which a nx item was taken-- Ed.

12212.5: YZ07, TANJUG Belgrade, Yugoslavia w/nx in EE at 1641, 425/50R (Ed.).

12492: ZEOG, Hon Kong flag ship M/V Blue-stream w/wx obs to Portishead R., ARQ at 2112 (Ed.).

12682.5: LFC, Rogaland R., Norway wkg ships in ARQ at 1704. Uses generid ID of LGB (Ed.).

12826: GYU, RN Gibraltar w/foxes at 0400, 850/75R (Zaid, WI).

13072: GKES, Portishead R., England w/plaintext wx, FEC at 2130 (Ed.).

13089: SPB, Szczecin R., Poland w/ARQ tfc in Polish at 2200. ID in CW at 2214 (Ed.).

13108.5: Un-ID w/phase sig, ARQ/425 at 1848 + CW ID of ITN. Any idea whozit? (Ed.).

13516: Telexes in FF had NBK/LSHI in headers, 170/50R at 1358. Methinks it could be 9RE355, Lubumbashi, Zaire ("LSHI") to Nairobi ("NBK"). Any other opinions? (Ed.).

13526: DJH51, Gregel Meteo, FRG w/coded wx at 1347, 100N (Ed.).

13845: RFQP, French mil, LePort, Reunion w/controle de voie & RUN circuit ID at 1420, TDM-A/96 (Ed.).

13865: RUZU, SAAM Maladzezhnayo Base, Antarctica w/RYRY, foxes & le bricks at 1603, 500/50R (Williams, CO).

13872.5: Presumed HGX21, MFA Budapest, Hungary w/nx in Hungarian at 1622, ensing soon after, 425/100R (Ed.).

13920: AXM35, Canberra Meteo, Australia w/msg at 0516 re failure of GOES-WEST wx satellite. Was 850/50R (Williams, CO).

13927.6: DFN92, MFA Bonn, FRG w/nx in GG from vat nx svcs, FEC-A/96 at 1459 (Ed.).

13940: CLP1, MFA Havana, Cuba w/crypto after ZZZZ & a "noticio" in SS to Managua at 1523, 500/75N (Ed.).

14613.6: Wondering if this is FSB, Interpol HQ in Paris at 1617 in ARQ. Saw "FFFFF..." + "OK bene-creu." Off 1626, back 1739 w/"DE IP QRU" & few words in FF, more QRU's foll & off 1802 (Ed.).

14642.6: AUS, UN Nicosia, Cyprus w/RYRY at 0500, 275/75N (Williams, CO).

14647: TAD, MFA Ankara, Turkey w/nx in Turkish, 1406-1413, 850/75R (Ed.).

14676: CLP1, MFA Havana w/crypto after ZZZZ + msg in SS. Was 425/50R at 2132 (Ed.).

14760: BAT93, XINHUA Beijing, PRC w/nx in EE at 1115, 376/50N (Hetherington, FL).

14763.8: A9M70, GNA Manama, Bahrain w/nx in EE at 1543, 350/75R (Ed.).

15832: Pos GDR Embassy in Havana w/short 5L msgs at 1304, 425/75N (Ed.).

15946.5: Un-ID w/ARQ tfc in SS & msg w/2L grps at 1734. Headers contained "Emda cair," "emba ashton," & "emba dams." The respective locales were probably Cairo, Washington, & Damascus. Might be related to similar tfc noted several days later on 21826.5 (Ed.).

15959: TAD, MFA Ankara, Turkey w/tfc & nx in Turk at 1613 & 1900, 850/75R (Hetherington, FL).

15970.8: CLP1, MFA Havana, Cuba w/"urgente" circular at 2053, 1000/50N (Williams, CO).

16005: Poss MFA, Sofia, Bulgaria w/tfc going to a huge list of embassies in eastern Euro capitals (except Sofia) & elsewhere was noted in the tfc that consisted of 5F grps. Was 550/75N at 1215 (Ed.).

16015: LZG7, MFA Sofia, Bulgaria w/crypto after DDDDD & text in Bulgarian, 425/75N at 1307 (Ed.).

16045: CLP1, MFA Havana w/5F tfc & cable to Embacuba Guyana, 425/50N at 1337. Into CW at 1343 (Ed.).

16130: Un-ID w/5L tfc at 0135, 75N. S/off 0150 w/QRI QST CFM TKS GB SK (Ed.).

16131.7: Prob Egyptian Embassy in Washington w/nx in EE re Middle East, + tfc in AA. ARQ at 2315 (Ed.).

16136: BZR66, XINHUA Beijing, PRC w/RYRY at 1129, 425/75R, the 1 nx item in EE at 1152 & back to RYRY at 1154 (Ed.); Same w/nx in EE at 1305, 370/75R (Hetherington, FL).

16145: RWM77, APN Moscow, USSR w/nx in EE, 100N at 1303 (Ed.).

16150: 9VF205, Jiji Singapore w/nx in EE at 1345, 425/50N (Ed.).

16224: 3MA35, CNA Taipei, Taiwan w/RURY at 1450 & nx in EE at 1520, 50 bauds (Reese, Thailand).

16240: CLP1, MFA Havana w/RURY & ID at 1935, 50N. Off w/a sending any t/c (Ed.).

16260: REM57, TASS Moscow, USSR w/RURY & nx in FF at 1851, 50R (Ed.).

16281-16282.8: MKD, RAF Akrotiri, Cyprus w/RURY's & foxes, FDM 50N on 8 channels at 2253 (Ed.).

16288: 5KM, Bogota Navrad, Colombia w/RURY & SCSG to LOL at 1919, 75R (Ed.).

16291: RFFXL, French mil, Beirut, Lebanon w/control de voie, RYRY, le brick & 10 count, then t/c in FF at 1830, ARQ-E/72 (Ed.).

16303: MFA Belgrade, Yugoslavia w/nx in EE at 1502, 425/75N (Ed.).

16305: Un-ID w/crypta, 75N at 1251, off 1253 w/HR QJB QRD QTC?? Into CW 1254 (Ed.).

16308: Y7A66, MFA Berlin, GDR w/RURY at 1155, 50N (Ed.).

16309: Guessing a Yugoslav diplo sta somewhere w/crypta after XAXAXA, FEC-A/144 at 1145 (Ed.).

16339.5: CJL, MFA Nicosia, Cyprus w/RURY & ID 1450-1455, 425/100N. Into ARQ-E/96 mode at 1500 but no t/c (Ed.).

16356.5: KAWN, Carswell AFB, TX w/aero wx at 0312, 850/75N (Ed.).

16361.6: Egyptian Embassy, Dakat, Senegal w/telexes in FF & AA - 5L msg pegged "to be del at once" & ending w/"182 groups." ARQ at 1759 (Ed.).

16696.5: UUPZ, un-ID Soviet ship wkg UHB w/5F t/c at 1810, 170/50N (Kneitel, NY).

16699.5: EWPW, Sov vessel Soulai w/RURY & 5F t/c at 1816, 170/50N (Kneitel, NY).

16702: UNMK, Sov fish factory ship RPB Vostok w/t/c for another ship, via URL at 1642, 170/50N (Ricks, PA).

16789: GYU, RN Gibraltar w/foxes at 0333, 850/75R (Zaid, WI).

17030.8: GYA, RN London, England w/freq chart at 1352, 75R (Ed.).

1703: NRV, USCG Apia Harbor, GU w/plaintext wx for NW/S Pac, Persian Gulf & Indian Oceans, FEC at 1509 (Ed.).

17204: SAB814, Gateborg R., Sweden w/telex t/c

in ARQ at 1647 (Ed.).

17212.5: OXZ, Lyngby R. Denmark, w/nx in Danish, FEC at 1630 (Ed.).

17390: 3VA74, TAP Tunis, Tunisia w/nx in FF at 1457, 425/50N (Ed.).

17427.5: OFD47, PIT Helsinki, Finland w/nx in Finnish, FEC at 1727 (Ed.).

17440.6: MFA Rome, Italy w/nx in II, ARQ at 1928 (Zaid, WI). Thanks for the printout. The IGP663 it contains is the circuit ID (IGP) & file # (663) of the nx bc. Actual call sign is IPC20-- Ed.

17463.8: Un-ID w/data bursts at 1705, 170/50R. Figs 171823 appear on 1 line & 686868 below them; both gps repeated every 5 sec until xmsn ended 1709 (Ed.).

17495.2: FDY, French AF, Orleans, France w/RURY, le brick & 10 count at 1700, 425/50R (Ed.).

17917: CAI7E, Pasqua Aero, Easter Isl., w/RURY at 0432 - 2200, 850/50N (Williams, CO). Hey Dallas, the lost RTTY monitor who copied Easter Island got a swelled head!-- Ed.

18005.7: Egyptian Embassy somewhere w/ARQ t/c in AA, 1359-1408 (Ed.).

18026: Bulgarian Embassy, London, England w/telexes, 500/75N at 1335-1343 (Ed.).

18035: ZRH, Cape Town Navrad, RSA w/RURY & foxes to LOL at 1210, 850/75R (Ed.).

18242: ZRO4, Oretaria Meteo, RSA w/coded wx at 1351, 425/75N (Ed.).

18320: OMZ, MFA Prague, Czechoslovakia w/nx in Czech, 425/75N, 1334-1342 (Ed.).

18388.5: SAF, Tripoli, Libya w/coded wx at 1217, 425/50R (Ed.).

18405: RCT57, TASS Moscow, USSR w/nx item from ADN nx svc in EE at 1229, 425/50R (Ed.).

18666.3: Probably CLP1, MFA Havana w/SS t/c at 2023, each word X2, 400/45R (Kneitel, NY).

18690: Cuban Embassy somewhere w/RURY at 1300, then SS & crypta t/c, 425/40;R (Hetherington)

18700: Y2V44, ADN Berlin, GDR w/nc in EE at 1506, 50N (Ed.).

19027: PWZ33, Rio de Janeiro Navrad, Brazil w/RURY & foxes at 1400, 850/75R (Hetherington).

19112: MFA Jakarta, Indonesia w/text in EE & Indonesia & 5L gps, 425/50N at 1258 (Ed.).

19117.5: Un-ID Indonesian diplo w/ARQ t/c in Indonesian at 1333 (Ed.).

19220: MFA Pyongyang, N. Korea w/t/c at 0423, 500/50N (Williams, CO).

19237: Y7L36, GDR Embassy, Havana w/RURY & 5L grps at 1920, 170/50N (J.M., KY).

19792.5: VOA Lo Union, Philippines w/RURY at 2355 & E Asia/Pac nx file 0004, 75 bauds (Reese, Thailand).

19821.5: 4UN, UN Jerusalem, Israel w/ARQ t/c at 1507. Hrd coming on air while monitoring the next legging (Ed.).

19822.5: 5AF, Tripoli Aero, Libya w/aero wx at 1453, 50R (Ed.).

19865.5: YZJ4, TANJUG Belgrade, Yugoslavia w/nx in SS at 1446, 50R (Ed.).

19938: PHWR, Hickam AFB, HI w/wx for Japan at 0020, 850/75R (Williams, CO).

19980: 9BC33, IRNA Teheran, Iran w/nx in AA at 1130, EE at 1640, 425/50R (Hetherington, FL).

20085: ISX20, ANSA Rome, Italy w/nx in EE at 1505, 250/50N (Ed.).

20086.5: CLP6, Cuban Embassy, Conakry, Guinea w/RURY & 5F msg, 425/50N, 1458 (Ed.).

20110: UMK, loc unknown, w/RURY at 0410, fall by "QRU 73 SKSK" & off 0412, 1000/50N (Williams, CO). UMK is Soviet Arctic Meteom Murmansk-- Ed.

20187: IRS41, INA Rome, Italy w/nx in AA at 1427, 500/50N (Ed.).

20372: IRS23, ANSA Rome, Italy w/nx in FF at 1430, 350/50N (Ed.).

20381: CAK, Santiago Aero, Chile w/RURY t/c in reverse to read KAC KAC ED. Was 850/50N at 1425 (Ed.).

20385: RFFXI, French mil, Versailles, France w/t/c to Bangui, CAR at 1500, ARQ-E/72 (Ed.).

20425: MKD, RAF Akrotiri, Cyprus w/RURY's & foxes, 900/75R at 1623 (Williams, CO).

20482.5: VOA, LoUnion, Philippines w/nx in EE at 0028, 75 bauds (Reese, Thailand).

20495: CXR, Montevideo Navrad, Uruguay w/RURY, SCSG & foxes to YWM1, then t/c. Was 1000/75R at 1931 (Ed.).

20700: OMZ, MFA Prague, Czechoslovakia w/t/c in Czech to Phnom Penh, 1610, 425/75N (Williams).

20805.5: CLP1, MFA Havana w/5F grps to Embacuba, Congo, 425/50N at 2054 (Ed.).

20890: CLP1, MFA Havana w/t/c at 2000, 500/50N (Williams, CO).

20911: An un-ID N. Korean embassy w/t/c in Korean at 1919, 1000/50R (Hetherington, FL).

20990.5: OMZ, MFA Prague, Czechoslovakia w/5F grps & t/c to Havana at 1605, 425/75N (Williams).

21826.5: Un-ID sta w/ARQ msg of 2L grps at 1623. Ten min later went to USB on 21825 w/2 OM/SS discussing a telegram (Ed.).

21831.5: Spanish Embassy, Managua, Nicaragua w/mshs to MFA Madrid in ARQ at 1555 (Hetherington, FL).

21865: CLP1, MFA Havana w/t/c to Embacuba Angola, 490/50N (Hetherington, FL). Time not given-- Ed.

21875.8: Un-ID w/nx in EE at 1437, 350/100N. Nx item re Garbachev was sent to a sta on 21875.9. That sta gave QSL's & s/off at 1451 w/OK TKS See U tomorrow (sic) bibi (Ed.).

22422: GYA, RN London, England w/test tape at 1148, 750/75R. Still wonder if GYA's listing its channels of xmsns for its tests (Ed.).

22423.5: UVA, Moscow(?) R., USSR w/either nx or long msg in RR at 1350, 425/50N. Into CW at 1400 w/CQ de UVA QSW, fall by TTY t/c list & CW t/c for several ships (Hetherington, FL). Don't find any listings for a UVA, but UAT in Mosow has used this freq in past-- Ed.

22443: OST, Oostende R., Belgium w/g ships in ARQ at 1800 (Hetherington, FL).

22454.5: GYA, RN London w/freq chart test tape at 1152, 800/75R (Ed.).

22565.5: CBV, Valparaiso R., Chile idling in ARQ w/CW ID at 2000 (Hetherington, FL).

22585.5: SVI, Athens R., Greece w/nx in Greek, FEC at 1310 (Hetherington, FL).

22885: Un-ID w/nx in EE that was badly garbled. Was 425/50N at 1253 (Ed.).

22905.6: DMK, MFA Bonn, FRG w/t/c in GG to embassy at Brasilia. Was ARQ-E 170/96 at 1310 (Hetherington, FL).

22950: Y7A86, MFA Berlin, GDR w/5L t/c at 1213, 425/50N (Ed.).

22954.5: ANSA Rome, Italy w/nx in EE at 1222, 425/50N. New ANSA freq (Ed.).

23370: HZN50, Jeddah Meteo, Saudi Arabia w/coded wx at 1400. Was 100N (Ed.).

23528: Un-ID w/ARQ t/c at 1300. Noted words "skodinavich hva," but mostly gibberish (Ed.).

24790: ISX24, ANSA Rome, Italy w/nx in FF at 1646, 50N. Soon after sent RYRY & QRA then anncd end of day's sked (Ed.).

27587: Several Italian RTTY outborders at 1848, 170/45N (Kneitel, NY).

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FAX Intercepts

17367: 5YE, Nairobi Meteo, Kenya w/wx charts at 1749, 120/576 (Ed.).

19690: AXM37, Canberra Meteo, Australia w/poor sig at 0049 (Richard Gleitz, PA).



LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

No sooner did Radio Australia start testing its new facility at Brandon (near Townsville in Queensland) than it was damaged by a cyclone. It was the second time something of that nature had happened to Radio Australia. In 1974 a cyclone destroyed nearly all of the Darwin transmitting site. This time, the damage was far less severe. The top of one antenna was blown off and commercial power to the site was cut. The station soon resumed testing, running from 0800 to 1400 and 2000-2100 on 6020 and occasionally showing on 11770, too. The new facility employs the same 10 kilowatt transmitters used at the now abandoned Lyndhurst site. The new location serves Fiji and the Pacific.

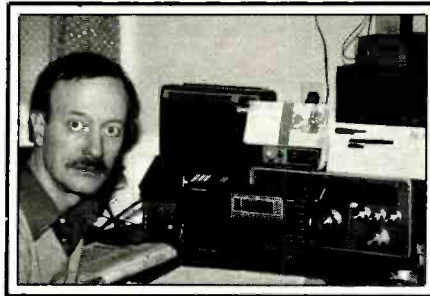
Worldwide Christian Radio (WWCR) in Nashville, Tennessee had still another delay in its startup and, at this writing, was targeting the 29th of May as the date for beginning regular programming. Frequencies to watch are 7520 and 15690. The new station notes that it will be the first to use a new audio processor designed especially for use in shortwave transmitters so we'll all have to pay attention to see if we notice a better sound on this station. Programming is supposed to be in English, Spanish, French, German and Hebrew.

Trans World Radio says it has plans to build a medium and shortwave station near the city of Goiania in central Brazil. The station would aim at providing a service to that country. No idea on when we can expect this one active.

High Adventure Ministries' Voice of Hope, which has literally operated "under the gun" in southern Lebanon has been moved seven miles south of its former location and now operates from the "Hill of the Dove" inside of Israel. According to the group's newsletter, Israeli soldiers helped the station move. The station may, or may not, be back on the air by the time you read this as funds were still needed to buy a transformer to convert Israeli power to the type required by the transmitters and for a building to house the generators. Voice of Hope frequencies are 6215 and 6280. 6215 is also used by Radio Caroline/World Mission Radio, so 6280 may more likely be used. Incidentally, High Adventure is just beginning preparing the land on Guam for building its China Voice of Hope station.

Radio Nacional Chile is said to have reinstated a foreign service on 15140, but in a pretty abbreviated form. It's scheduled daily at 2330-0000 on 15140 and, we assume, includes English.

According to a newsletter, the FCC revoked the construction permit of "NDXE," the proposed and anticipated commercial



Frequent Listening Post reporter Joe Wright in his Jamaica Plain, MA shack near Boston. He has 3 shortwave sets, a CB unit and three scanners!

stereo shortwave station in Opelika, Alabama. The FCC noted that shortwave construction permits are normally good for only one year (NDXE's had been issued in 1984). The Commission said it had been presented with no evidence to show that construction had started or that equipment had been ordered. Let's hope this isn't the end of the line for NDXE.

That new African signal on 4965 isn't from Namibia. It's a new service to Namibia, from Radio RSA in South Africa. We don't have a full schedule for this service which is aired in Afrikaans but it's being widely heard in US evenings.

Reactivation of shortwave stations continue in Colombia. The longtime cultural broadcaster Radio Sutatenza, which has been silent for some time has resumed broadcasts on 5095 and is running programming from the Caracol Network. Emi-



Arthur Kleiner of Levittown, NY designed this shortwave collage as part of his shack's wall decor.



This QSL from KSDA, Adventist World Radio in Guam shows the station with the Pacific Ocean in the background.

— DID YOU KNOW? —

**There is a Short Wave Radio Station
in Our Community**

The Anchor Point and Homer
churches of Christ
invite you to an

OPEN HOUSE
2 to 4 p.m.
Sunday, March 19

KNLS

- Tour facilities
- View slide presentation
- Refreshments served
- Listen to sample programming

- Broadcasts 17 hours a day.
- In these countries and languages: English, Russian, Chinese, Japanese, Vietnamese, Philippine dialects
- Programming consists of a variety of good music and bible teaching
- Makes NO appeals for public funding - is supported by churches of Christ around the world
- Been operating in the Anchor Point-Homer community since July, 1983
- Reaching behind the bamboo and iron curtains with the gospel of Jesus

Newspaper ad for a KNLS open house. Sorry we couldn't make it! Thanks to Douglas Stingley, Salem, Oregon.

sora Meridiano 70 on 4925 has also returned to the air as a member of the Todelar network. Both stations are well heard in the evening hours with programs in Spanish.

Mail Check: A letter from Gregory J. Grushklo in Chester, New York answers a question from Craig W. Dible some months back as to the status of Nigeria's "DX Africa" club. Gregory had a letter from the club's sparkplug saying it had to close down due to financial difficulties.

The shack of Joe Wright in Jamaica Plain, Massachusetts is on these pages this month. Joe has been DX'ing since 1965 and did a stint with the US Army Signal Corps.

Returning to shortwave after 15 years is Richard E. Hankison of Prairie Village, Kansas. He says he "went out and purchased a used Yaesu FRG-770, Eavedropper antenna and a copy of *Popular Communications* and had at it." He notes that an awful lot has changed in shortwave over 15 years. So right! Welcome, Richard and we hope you'll check in often.

Thanks to Douglas Stingley in Salem, Oregon who sends a clipping from an Alaska newspaper about an open house at KNLS. Doug wonders about indoor active antennas vs. longwires. We are far from tech experts, Doug, but it's pretty hard to beat an outdoor longwire with any indoor antenna.

Thanks to Michael Yohnicki in London, Ontario for the 1989 version of the Radio Canada International QSL card.

Jim Fakkema in Angwin, California heard WCSN mention that their Saipan station, KYOI, would have a reduced schedule for several months while transmitter maintenance work was being done. In answer to your question, Jim, Radio For Peace International is a non-commercial station in Costa Rica, operated by the World Peace University of Oregon and Costa Rica's University for Peace.

Wisconsinite Michael Fisher of Eau Claire has been a radio monitor since his days as a Navy radioman back in the early 1970's. He used an R-390 in those days and now listens on a Panasonic RF-2200.

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

After 20 years of DX'ing, Art Kleiner now has his own radio shack in his basement and he has been busy putting it in order and creating eye-catching shortwave wall decor, as seen in one of our photos this month. Art, who listens from Levittown, Nw York, says he doesn't contribute to publications much but we hope he'll make an exception for us now and then!

William Pearce in Youngstown, Ohio is one of several people who have benefitted from a sudden surge of Radio Damascus QSL's, sent via registered mail, no less. William uses a Kenwood R-5000 and notes that both Radio Damascus and UAE Radio, Dubai are good sources for information on the middle east situation.

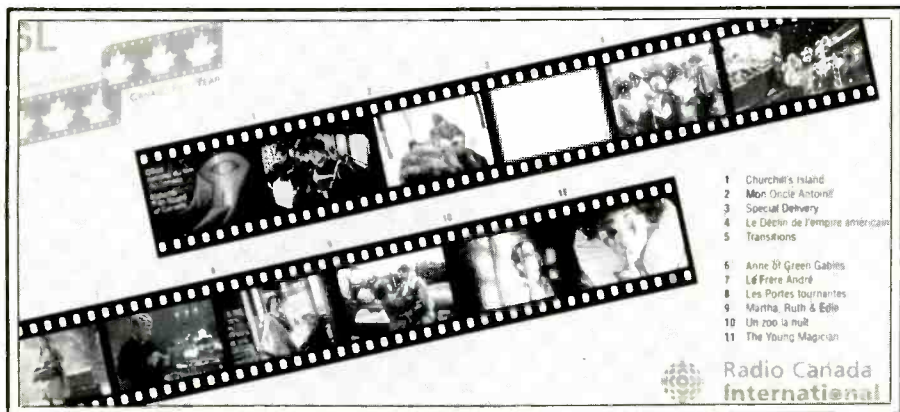
We welcome your letters with your comments, questions and suggestions. Of course, your reception logs are certainly wanted as well! But please remember to include your last name and state abbreviation after each item and leave enough room between them so they can be easily cut apart. Thanks. Shack photos and spare QSL cards you don't need returned are also sought for

illustration use. Program and frequency schedules, news clippings and whathave-you are also welcome. We appreciate your support and all the kind comments we receive!

Here are this month's reports.

SWBC Loggings
All Times Are UTC
English Except as Noted

- Algeria:** R. Algiers, 15215 at 1900 w/nx & rack (Giannarelis, Greece).
- Angola:** R. Nacional, 11955 at 1600 w/IS & ID in PP, then s/on 1601 (Gilbert, CA).
- Antigua:** DW relay, 17810 at 2000 in GG (Fakkema, CA).
BBC relay, 15260 at 2045 w/nx (Lindsey, KS).
- Armenian SSR:** R. Yerevan, 15455 at 0330 after Kiev closes. In Armenian, then EE at 0350 (Hankison).
- Ascension Isl.:** BBC relay, 6005 at 0310 under strong QRM (Mierzwinski, PA).
- Australia:** R. Australia, 9580 at 1307 (Reynolds, MO); 15160 at 2100 w/nx, Top 10 (Giannarelis); 17795 at 0400 on Pacific beam (Hankison, KS); Here & 21740 at 2200 to Asia/Pac. Whatever became of the Kookabura bird? (Fakkema, CA). Haven't heard anything about it being dropped. Hope not!-- Ed.
- Austria:** R. Austria Int'l., 6015 at 0341 in GG (Gilbert, CA).
- Belgium:** BRT, 17560 at 1330 (Reynolds, MO).
- Botswana:** R. Botswana, 7255 at 0358 w/barnyard IS (Gilbert, CA).
- Brazil:** R. Cultura do Para, 5045 at 0355-0410 in PP w/mostly continuous mx, few ID's between selections (Mierzwinski, PA).
Rd/sra. Coeres, 3275 in PP 0405-0430 OM talking, mx, ID 0422, all PP (Mierzwinski, PA).
Radiobras, 11745 at 0231 (Reynolds, MO).
- Bulgaria:** R. Sofia, 9740 w/nx & talk at 1530 (Giannarelis, Greece).
- Burkina Faso:** R. Burkina, 4815 in FF at 0640 (Gilbert, CA).
- Canada:** RCI, 17820 at 1900 w/nx, *SWL Digest* (Giannarelis, Greece).
R. Japan (via Sackville), 5960 at 0305 (Reynolds).
Chad: R. Nationale, 4904 at 0504 w/mx (Gilbert).
China, Peop. Rep.: R. Beijing, 6860 at 2100 w/nx & current affairs (Giannarelis, Greece); 11685 at 0400 (Fakkema, CA); 11715 (via Mali-- Ed.) at 0330 (Lindsey, KS); 12015 (Xian site) in CC to 1115 s/off (Mierzwinski, PA); 15600 at 1340 in CC (Northrup).
Colombia: Ecos del Attrato, 5020 at 0300 in SS w/Latin mx, definite ID's. Unlisted in WRTVH (Urbel, NY). Was inactive but now returned-- Ed.
Caracal Neiva, 4945 at 1100 in SS (Gilbert, CA).
La V. del Cinaruco, 4865 in SS at 0611 w/mx (Gilbert, CA).
- Costa Rica:** R. far Peace Int'l., 21565 at 2100 w/Consider the *Alternative* human rights pgm (Miller, GA); Also 2100 (Lindsey, KS).
TIFC/Faro del Caribe, 5055 at 0302 w/Focus on *The Family* (Reynolds, MO); 0340-0355 rx mx, ID, mentions of Costa Rica (Mierzwinski, PA).
- Cuba:** R. Havana Cuba, 9655//11820 at 0300 (Fakkema, CA); In SS on 15155 at 1357 (Reynolds).
- Czechoslovakia:** R. Prague, 21705 at 0830 w/nx & *Weekend Magazine* (Giannarelis, Greece).
- Denmark:** R. Denmark, 15165 at 1900 in Danish (Giannarelis, Greece).
- E. Germany:** RBI, 11785 at 0230 (Fakkema, CA); 15040 at 1335 w/nx summary & trade union talk (Fisher, WI); 21540 at 0845 (Giannarelis, Greece).
- Ecuador:** HCJB, 3220 in SS 0445 (Mierzwinski, PA); 9655 at 0645 (Giannarelis, Greece); 15155 at 0128 w/Passport (Reynolds, MO); 17790 at 2200 in SS and 21470 at 2100 in GG (Fakkema, CA).
R. Quito, 4920 at 0337-0437 in SS w/mx, ID by OM at 0345 (Mierzwinski, PA).
- England:** BBC, 5975 at 0400, & 15260 at 0230 (Fakkema, CA).
- Finland:** R. Finland Int'l., 15185 at 1505 w/Northern Report (Giannarelis, Greece); 15400 at 1440 (Roupe, WV).
- France:** RFI, 15345 at 1240 in FF (Northrup, CT).
- French Guiana:** RFI relay, 17860 at 1235 OM & YL talking, no IS (Northrup, CT).
- Gabon:** Africa #1, 4830 at 0502 in FF (Gilbert, CA); 0500-0545 (Rogers, OK).
- Ghana:** GBC-2, 3366 at 2250 w/nx & sports scores. African mx & off 2305 (Roupe, WV); GBC-1, 4910 at 0704 w/nx (Gilbert, CA). Do you mean 4915?-- Ed.
- Greece:** V. of Greece, 15630 at 1235 w/Greek mx & YL, no ID (Northrup, CT).
- Guam:** KTW/R, 11805 at 0908 (Story, TX).
- KSDA, AWR/Asia,** 11980 at 1600 w/nx & mailbag (Giannarelis, Greece).
- Guatemala:** R. Tezulutlan, 3370 in SS at 0230-0300 (Rogers, OK).



Michael Yohnicki supplies the 1989 version of Radio Canada International's Do It Yourself QSL.

R. Chartis, 3380 at 0200-0230 in SS (Rogers, OK).
 La V. de Nahuala, 3360 at 0230-0300 in SS (Rogers, OK).
 R. Maya de Barillas, 3325 at 0300-0330 in SS (Rogers, OK).
 R. Cultural, 3300 at 0300-0400 w/tx pgm (Rogers, OK); in SS at 0540 (Gilbert, CA).
Honduras: HRVC/La V. Evangelica, 4820 at 0304 in SS (Gilbert, CA).
 R. Luz y Vida, 3250 at 0350-0403 in SS w/talk, mx, ID, anthem-type mx 0358 & off 0403 (Mierzwinski, PA).
Hungary: R. Budapest, 9835 in Hungarian at 0221 (Gilbert, CA).
India: AIR, 9545 at 1340 w/nx & commentary, UN pgm (Story, TX); 9570 at 1345 w/lite mx, nx 1400 (Fisher, WI); 11620 at 1845 mx, nx, commentary (Giannarelis, Greece).
Iran: VOIRI, 9022 at 1930 w/tx reading, nx & mailbag pgm (Giannarelis, Greece).
Iraq: R. Baghdad, 9515 at 0305 w/mideast mx, ID (Hankison, KS); 9770 at 2030 w/ID in GG, mideast mx (Roupe, WV).
Israel: Kol Israel, 9435 at 2245 w/nx, commentary, IS, ID & into Yiddish at 2300 (Roupe, WV); At 0215 (Gilbert, CA); 15640 at 2230 w/Week in Review (Lindsey, KS).
Italy: RAI, 7235 at 2025 w/nx & mx. QRM from DW (Giannarelis, Greece).
Japan: R. Japan, 11875 at 0906 in PP (Gilbert, CA) 15325 (via Canada) at 0300 w/nx, comment, Tokyo pops (Miller, GA); 21700 (via Gabon); at 1500 w/This Week (Giannarelis, Greece).
Jordan: R. Jordan, 11940//11955 at 0415 in AA, 1 mention of "Huna'Amman...," (Mierzwinski, PA).
Kuwait: R. Kuwait, 11655 w/ID, nx from 1830 tune in, pops at 1842 (Roupe, WV); 0410 in AA (Gilbert, CA).
Lesotho: R. Lesotho, 4800 at 0325 in Sesotho (Gilbert, CA).
Liberia: ELWA, 11955 at 0745 in AA (Gilbert).
Libya: R. Jamahiriya, 15235//15415//15450 in AA at 2318 (Gilbert, CA).
Lithuanian SSR: R. Vilnius, 9860 at 2310 w/local nx (Hankison, KS).
Luxembourg: R. Luxembourg, 6090 at 0604 in GG w/EZ listening mx (Gilbert, CA).
Madagascar: R. Netherlands relay, 15560 at 1630 w/nx, **Media Network** (Giannarelis, Greece); 17557 at 1437 (Reynolds, MO).
Mali: RTV Malienne, 4835 at 0600 s/off in FF (Gilbert, CA); 4783//4835//5995 at 0605-0630 w/tx (Urbelis, NY).
Malta: V. of Mediterranean, 9765 at 0605 w/many ID's, talks on Palestine (Urbelis, NY).
Mauritania: ORTM, 4845 in FF at 0724 (Gilbert).
Morocco: RTVM, 15105//15335 at 0050-0100 in AA (Gilbert, CA); 15335 at 2354 in AA, ID 0000 & into nx (Roupe, WV); At 1953 (Hankison, KS); 17595 at 1510-1540 w/pops (Urbelis, NY).
Mongolia: R. Ulan Bator, 12015 at 1200 s/on w/IS. Mix w/Moscow & Beijing simultaneous s/ons so quite a mess (Urbelis, NY).
Netherlands: R. Netherlands, 13770 at 1440 (Reynolds, MO); 17605 w/Happy Station at 1130 (Giannarelis, Greece).
Netherlands Antilles: R. Netherlands Bonaire relay, 6165 at 0122 (Reynolds, MO); 6165//9590 at 0330 (Fakkema, CA).
 TWR, 9535//11930 at 0300 (Fakkema); 15345 at 1240 w/tx pgms (Northrup, CT).
New Zealand: R. New Zealand, 15150//17705 beam to Australia & Pac s/on 0330 w/Bell Bird IS (Fakkema, CA); 0400 on 17775 w/nx, wx, mx (Hankison, KS).
N. Korea: R. Pyongyang, 6576 at 2000 w/nx & talk (Giannarelis, Greece); 17735 at 1135 w/talk, ID, mx interludes (Mierzwinski, PA).
N. Vietnam: V. of Vietnam, 10060 daily in un-ID lang w/nx & Vietnamese mx 1200-1230 (Urbelis, NY).
Oman: R. Oman, 17770 at 0430 in AA (Gilbert).
Pakistan: R. Pakistan, 15545 at 1748 w/nx, tx talk (Giannarelis, Greece).
Portugal: R. Portugal, 9635 at 2157 in PP w/ID, time check, into mx (Roupe, WV); 9705 at 0252 (Reynolds, MO).
Romania: R. Bucharest, 9510//9570 at 0214 (Gilbert, CA); 15365 at 1730, nx & talk (Giannarelis).
Saudi Arabia: BSKSA, 9720 at 1631 w/talk, features (Giannarelis, Greece); 15060 at 0400 w/IS, anthem, s/on (Gilbert, CA).
Seychelles: FEBA, 11790 at 0300 s/on in un-ID lang (Hankison, KS); 15325 at 1354 in Urdu. Sub-continental mx, 1359 w/EE ID (Roupe, WV).
Singapore: SBC on 11940 at 1200 w/nx, Nat King Cole recordings (Story, TX).
Solomon Isls.: SIBC, 9545 in Pidgin & EE, commercials, nx (Story, TX).
South Africa, Rep. of: R. RSA, 9615//11730 at 0245; 21535 in PP at 2000 (Fakkema, CA); 21660 at 1410 (Reynolds, MO).
S. Korea: R. Korea, 15575 at 1358 (Reynolds, MO); Nx & Seoul Calling at 2030 (Giannarelis).
Spain: Spanish Nat'l. R., 9630 at 0459 (Reynolds, MO); 9630//15110 at 0000 & 0100 (Fakkema, CA);

11790 at 1912 w/nx & commentary (Roupe, WV).
Sweden: R. Sweden, 7265 at 1800 w/nx & Sweden Calling DX'ers (Giannarelis, Greece).
Switzerland: Swiss R. Int'l., 6135//9725//9885//12035//17730 at 0200 (Fakkema, CA); 0400 w/Dateline on 9885 (Lindsey, KS); 11930 at 0315, freq list & Swiss mx (Fisher, WI); 21630 at 1530 (Giannarelis, Greece).
Syria: R. Damascus, 9950 at 2005 w/nx, AA mx, From the World Press pgm (Giannarelis, Greece); 12085 at 2146 w/mix of Western pops & AA mx (Roupe, WV).
Tahiti: R. Tahiti, 15170 at 0430 w/island mx, OM & YL in FF & local langs (Hankison, KS).
Tunisia: R. Tunisienne, 7475 at 2310 in AA w/nx, AA mx to 2326 close (Roupe, WV); 0530 w/mx, talk in AA (Gilbert, CA).
Turkey: V. of Turkey, 7180 at 1700 in Greek (Giannarelis, Greece); 9445 at 2300 (Reynolds, MO); 0420 w/Turkish mx (Hankison, KS).
 U A E: UAE R & TV, Abu Dhabi, 11940 at 0330 w/nx, Images of Africa (Giannarelis, Greece); 17775 at 0330 w/nx (Gilbert, CA).
 V. of the UAE, Dubai, 11865 at 0500 in AA (Urbelis, NY); 11965//13605 at 1822 in AA (Roupe).
 U S A: WSHB, Cypress Creek, SC, 9455 at 0530 running //WCSN on 9870 (Urbelis, NY); 15205//17555 at 2345 (Fakkema, CA).
 WCSN, 15390//21640 at 2100 (Fakkema, CA).
 WYFR, 13695 at 2300, & 15566//17613//21525-//21615 at 2000 (Fakkema, CA).
 WOFB (via WYFR), 5985 at 0330 w/CC lesson (Lindsey, KS); 9680 at 0245 (Fakkema, CA).
 V. of the OAS (via VOA-- Ed.), 11830 at 0012 in SS w/classical guitar, off 0030 (Roupe, WV).
 WINB, 15145 at 2330; 15295 at 1600 (Fakkema).
 WRNG, 6185 at 0345 (Fakkema, CA).
 KVOH, 13695 at 0142 (Reynolds, MO); 17775 at 2230 (Fakkema, CA).
 WHRI, 9495 at 0136 w/tx pgms (Fisher, WI); 17830 at 1930 (Fakkema, CA).
 U S R: R. Moscow, 9895 at 0800 w/nx (Gilbert, CA); 11840 (via Cuba) 1900-2000 (Lindsey, KS); 1332 (Reynolds, MO).
 Moscow II, 5920 in RR at 0320, ID 0330 (Mierzwinski, PA).
 R. Peace & Progress, 12030 at 1630 w/nx, political talks (Giannarelis, Greece); 17645 at 1414 w/feature (Reynolds, MO).
Uzbek SSR: R. Tashkent, 7325//11785 at 1330 w/nx & mx (Reynolds, MO).

Vatican: Vatican R., 6248 at 0259 in Romanian. Church bells to 0300 s/on w/ID, talk, rx mx (Mierzwinski, PA); 7125 at 0158 (Reynolds, MO); 9645 at 2050 w/nx (Giannarelis, Greece).
Venezuela: La V. de Garabobo, 4780 in SS 0330-0400, romantic ballads, ID 0356 & gonzo (Rogers, OK).
 R. Mara, 3275 at 0300-0400 in SS w/LA mx, ID 0329, EZL mx (Rogers, OK).
 R. Maturin, 5040 at 0330 in SS, mx chime tones, commercials, ID (Mierzwinski, PA; Urbelis, NY).
 R. Rumbas, 4970 at 0315 in SS w/mx, ID (Mierzwinski, PA).
 Ecos del Torbes, 4980 at 0325 mil type mx, ID, apparent nx 0330 (Mierzwinski, PA).
Vietnam: V. of Vietnam, 10010 at 1219 in CC (Gilbert, CA).
W. Germany: Suddeutscher Rundfunk, Stuttgart, 6030 at 0550 in GG. Nx 0600 (Urbelis, NY).
 Bayerischer Rundfunk, 6085 at 0157 w/pops, pips, ID 0248. Covered by DW s/on 0300 (Miller, GA).
 DW, 17875 at 0600 w/nx, Religion in Society (Giannarelis, Greece).
Yugoslavia: R. Yugoslavia, 5980 at 1930 w/nx, Spotlight on Culture (Giannarelis, Greece); 9625 at 0118 w/mx, Science & Technology (Fisher, WI); 9660 at 0045 w/nx, Music Box pgm; 15325 at 1258 (Reynolds, MO).

And that's a wrap for this month. Many thanks to the following reporters this month: Robert A. Lindsey, Lawrence, KS; Mark A. Northrup, Danbury, CT; Michael Fisher, Eau Claire, WI; Lloyd W. Roupe, Knob Fork, WV; Lowell Rogers, Ponca City, OK; Cliff J. Reynolds, Hazelwood, MO; Warren Gilbert, Sherman Oaks, CA; Aris Giannarelis, Athens, Greece; Jim Fakkema, Angwin, Ca; Errol Erbelis, Kings Park, NY; Frank Mierzwinski, Mt. Penn, PA; John Miller, Thomasville, GA; Richard E. Hankison, Prairie Village, KS, and Kevin Story, Midland, TX.
 'Til next month, good listening! **PC**

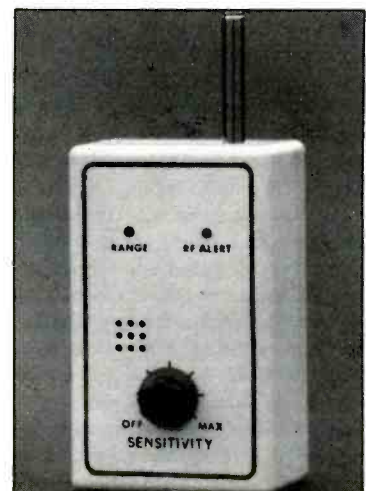
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WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Technical Amendment To Rules To Improve AM Broadcast Service

As part of its effort to improve the quality of AM broadcast service, the Commission adopted the National Radio Systems Committee (NRSC) emission limitation known as NRSC-2 as a new AM broadcast standard, beginning June 30, 1990. To facilitate the implementation of this new standard, the Commission also announced that until June 30, 1994, stations adhering to NRSC-1 audio pre-emphasis will be presumed to comply with NRSC-2, in the absence of specific information to the contrary.

Currently, AM stations are permitted to transmit a radio frequency signal with a bandwidth of up to 30 kHz. However, the majority of consumer receivers are designed with a much narrower receiver bandwidth so as to reduce the effects of interference from adjacent channel stations. This severely reduces the audio fidelity of AM radios. In an attempt to overcome this fidelity limitation, many broadcasters pre-emphasize, or "boost," the higher audio frequencies which exacerbates adjacent channel interference.

The NRSC developed two standards designed to reduce adjacent channel interference. They are: the NRSC-1 audio standard which establishes limits on program audio frequency response that will often, but not always, reduce adjacent channel interference; and the NRSC-2 emission limitation, which limits the RF bandwidth of emitted signals that actually cause interference.

Although many commenters urged adoption of the audio processing standard, the Commission concluded that meaningful adjacent channel interference improvements could best be obtained by restricting emissions. The FCC offered the following bases for this conclusion: 1) used alone, the NRSC-1 audio standard will not be effective in alleviating interference produced by overmodulation or transmission system anomalies; 2) The characteristics of the audio response intended to be produced by the NRSC-1 filter can be readily circumvented or abused by adjustments made to other audio processing equipment; and 3) to the extent NRSC-1 specifies a particular pre-emphasis of audio signals below 10 kHz, it restricts the flexibility of licensees in adjusting their audio processing equipment.

Until June 30, 1994, stations employing the NRSC-1 will be presumed to comply with NRSC-2 in the absence of specific information to the contrary and will not be re-

quired to make periodic emission measurements as required by FCC rules. However, the presumption of compliance with the emission limits may be rebutted by technical evidence of noncompliance.

If the Commission receives interference complaints containing such evidence containing such evidence, it will require licensees to make their own measurements and take appropriate action. Licensees of existing stations who wish to operate pursuant to this presumptive compliance alternative must adhere to the NRSC-1 standard by June 30, 1990. Licensees of new AM stations who wish to operate pursuant to this alternative must comply with the NRSC-1 standard upon commencement of operations.

Aviation Services For Grand Canyon Area

The Commission amended Part 87 of the Rules (Aviation Services) to permit air-to-air communications between all types of aircraft on the very high frequency (VHF) 121.950 MHz, 122.750 MHz and 122.850 MHz in the vicinity of the Grand Canyon National Park in Arizona.

As a result of the aircraft accidents in the vicinity of the Grand Canyon, the Federal Aviation Administration asked the Commission for additional air-to-air frequencies to promote air safety in the area.

Working with the FAA staff, the Private Radio Bureau selected the three frequencies and granted a one year special temporary authority (STA) authorizing their use. The FAA indicated that these frequencies are working well and requested that the Commission make these frequencies permanently available by rule for the purposes of enhancing air safety in the Grand Canyon area.

The Commission noted that these frequencies have been in use in the area since June 1987 and no adverse comments have been received.

Regional Public Safety Plan For New York Metropolitan Area

The Chief, Private Radio Bureau, and Chief Engineer have accepted the regional public safety plan for the New York Metropolitan Area, Region 8. The Region 8 plan is the first regional plan submitted to the Commission and in the culmination of the efforts of the many public safety organizations that participated in its development.

The two Bureaus said the Plan is a landmark for the public safety community. They



recognized the tremendous effort that went into preparing the Region 8 Plan, which comprises counties from Connecticut, New York, and New Jersey.

In 1987, the Commission established policies and rules for a National Plan for public safety services to ensure that the new six megahertz of public safety spectrum (821-824/866-869 MHz) be used effectively and efficiently for important safety functions. The Commission established 55 regions and instructed each region to develop a plan for use of the newly allocated spectrum to meet current and future mobile communications requirements of the public safety and special emergency entities operating in the area. After each plan is completed and approved by its regional planning committee, it must be submitted to the Chief, Private Radio Bureau, and the Chief Engineer.

The Bureaus found that the Region 8 Plan conforms with the National Public Safety Plan and includes all the necessary elements specified in the 1987 Report and Order. Specifically, the plan provides a summary of its major elements, including usage guidelines, frequency reassignments, common channel implementation, encryption, use of long-range and cellular communications, application evaluation and appeal procedures. In a general description of how the spectrum is to be allotted among the various eligible users within the region, the plan "walks" through the algorithm it has adopted to maximize spectrum efficiency. The plan explains how the requirements of all eligible entities within the region were considered and met to the degree possible, and how future needs will be handled. It explains how the Plan has been coordinated with adjacent regions and offers a detailed

description of how the plan puts the spectrum to the best possible use by requiring system design with minimum coverage areas, by assigning frequencies so that maximum frequency reuse and offset channel use may be made, by using trunking, and by requiring small entities with minimal requirements to join together on a single system where possible.

The Bureau commended the Tri-State Regional Planning Committee for its excellent work in developing the Plan for a region with such a huge population concentration spread over three states and encompassing a multitude of public safety and special emergency entities. They said the Region 8 Plan represents a careful balance of public safety and special emergency mobile communications needs throughout the area and will result in efficient use of the newly allocated 800 MHz Public Safety radio spectrum. In particular, the Bureau noted the frequency reuse plan, the way in which blocks of frequencies were organized for wide area systems, and the careful detail evident throughout, down to specific channel assignments.

Upon release of the full text of the Order, the individual public safety entities in Region 8 may begin applying for licensing in the new 800 MHz spectrum.

FCC Reinstating New York Transit Authority Licenses

The Commission affirmed a decision by the Private Radio Bureau granting the New York City Transit Authority reconsideration of the cancellation of its licenses for the 20 trunked channels in the Land Transportation Radio Service and reinstatement of the licenses. The channels were licensed for use in a city-wide bus radio system that would provide operational and emergency communications. Comtran Associates, Inc., licensee of a 20 channel 800 MHz trunked Specialized Mobile Radio station in the New York City area, had sought review of the Bureau's action.

Upholding the Bureau's decision, the Commission stated that while the Bureau had acknowledged administrative deficiencies on the Transit Authorities part, it was correct in determining that public interest concerns outweighed such deficiencies. The Bureau's decision noted the proposed bus radio system was a unique one that involved the safety of millions of passengers on thousands of buses and that the system was totally dependent upon the Transit Authorities retention of the 20 channels at issue in this proceeding. The Commission said that the Bureau was correct in concluding that bureaucratic errors did not outweigh the significant public interest considerations favoring construction, because the safe and efficient operation of the urban mass transportation system for the largest city in the United States would have been seriously compromised by cancellation of these licenses. **PC**

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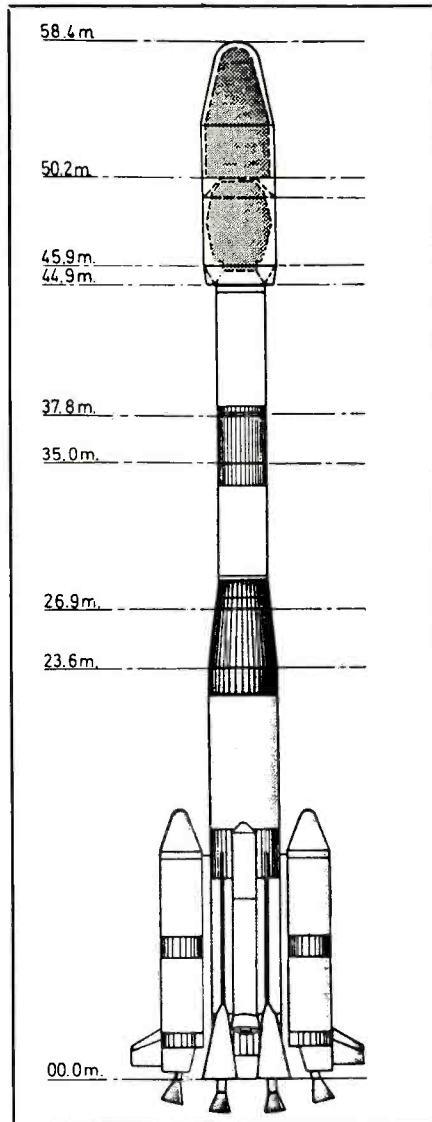
INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Microsats

With the advent of high-tech miniaturized circuits, it is somewhat surprising that no one thought of it until now. Of course it is not that no one thought of building smaller and cheaper satellites, it's just that the people building the satellites (and those ordering the satellites) have been suffering from what I call the Detroit Syndrome (remembering that most of the companies that build satellites are owned by the multi-national conglomerate auto makers of Detroit). They are still building huge, fuel hungry satellites with tail fins and a dog in the rear window with a bobbing head and turn signal eyes. But a new day has dawned, even commercial builders of satellites are thinking small. They seem to have recognized the wisdom in the saying that bigger is not necessarily better. The satellites with tail fins are still available for those who can afford them.

Microsats went public in 1984 when the Jet Propulsion Laboratory (JPL) began studying the possible use of small spacecraft for interplanetary probes. Several small prototypes have been designed, some as small as a coffee can. JPL plans to use the latest in micro-technology in their probes. They plan to use the 8, 20 and 32 GHz band for communications with their coffee cans. They have already developed an experimental 20 GHz transmitter for such a spacecraft. They have developed a single micro monolithic integrated circuit built on a single crystal of gallium arsenide. This chip includes circuitry for an optical recorder, a data processor which can handle many giga bits per second and a transmitter which can generate 200 milliwatts, the SDI office is understandably interested in this little gem.

Though microstats are the latest thing to hit the satellite market, they are certainly not new. They are only new in the sense that they have become public knowledge. Microstats are a spin-off of our spy satellite technology. The Defense Advanced Research Projects Agency (DARPA) began developing microsats in the mid-60's. By 1967 the US intelligence agencies had a fleet of KH-8 spysats which carried four microsats which were (and still are) released from the host spacecraft after it reaches orbit. All this simply proves that the agency's claim is true. Their technology is 10 to 20 years ahead of state-of-the-art. It also tells us that anything we know (or guess) about our intelligence agencies' technical capabilities is 10 to 20 years behind. Of course the problem with the microsat technology is that it is classified and the intelligence commu-



ESA's new Ariane 4 launch vehicle.

nity can not be expected to share its secrets with the public. For this reason the public has to re-discover this technology on its own, 10 to 20 years later. That is where we are now with the microsat, but developing this old technology in the public sector, puts us on the leading edge of technology as we know it.

As with many new technologies, the Amateur Radio community is in the forefront of this rapidly developing technology. The organization leading this assault is

PACKET SATELLITES

Satellite	Downlink	Uplink
PACSAT	437.050 MHz	145.900 MHz
		145.920 MHz
		145.940 MHz
		145.960 MHz
LUSAT	437.150 MHz	145.840 MHz
		145.860 MHz
		145.880 MHz
		145.900 MHz

DOVE 145.973 MHz

NUSAT 437.100 MHz

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119, CEP 01256
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Sao Paulo SP
Brazil, South America

Project DOVE
c/o Richard Ensign
AMSAT Science Education Advisor
421 N. Military
Dearborn, MI 48124

AMSAT, the Amateur Radio Satellite Corporation.

AMSAT IS the Amateur space program. They design and build experimental and operational spacecraft for use by any hobbyist, anywhere in the world, who has an interest in space science and communications.

Next month AMSAT will launch six new satellites. Four will carry Packet transponders, one, an experimental digital TV camera and the sixth, a voice synthesizer. Those of you who are already equipped for RTTY

and/or HF Packet will be familiar with this computer generated, error-free digital mode of operation. There is, however, one difference. Your packet TNC (Terminal Node Controller or Interface) uses AFSK. All satellite Packet is PSK. This format was refined by AMSAT-UK and their experimental satellites UoSat I and UoSat II. Two of the four satellites on the upcoming launch will be UoSat D & E. Though they use the Packet communications mode they are not microsats, but considerably larger (though they are quite small by commercial standards).

To tune satellite Packet you will need to add a PSK demodulator in front of your TNC. It will compensate for the doppler (frequency drift due to the motion of the satellite) and demodulate the AX.25 (1200bps) PSK signal. A demodulator kit can be ordered from Radiokit P.O. Box 973 Pelham, New Hampshire 03076.

Japan has also launched a Packet satellite, FO-12 (Fuji-Oscar), and a second is scheduled for launch in 1990. I should add that all the micro and other Packet satellites are in LEO (Low Earth Orbit), including those from Japan.

AMSAT has not only re-discovered microsats, they have re-discovered Packet as well. This digital mode was also first developed by DARPA in the 1960's for use on spyats. DARPA is now in the process of designing specialized packet systems for low level battlefield and tactical communications. The Naval Research Laboratory & DARPA are developing a three satellite experimental program called GLOMR (Global Low Orbiting Message Relay).

In 1987, the Army conducted a field test of a new Packet satellite transceiver, the PRC 6064. The tests were conducted through the single channel system of the TACSAT satellites. The PRC 6064 requires a channel bandwidth of 25 kHz as the packet signal is encrypted with the addition of a KY-57 before transmission through the satellite. The results of the test were mixed as there were problems with both operator errors and data errors somehow showing up in this error-free format.

At one point the Air Force had approached AMSAT and expressed an interest in their technology. A proposal was made which promised space on future launch vehicles in exchange for the technology. This exchange may be out of the question now with the current backlog of payloads.

Let's take a closeup look at each of the six satellites scheduled to be launched on an Ariane 4 launch vehicle by ESA from South America next month.

PACSAT - This is the name of AMSAT-NA's satellite. It, like all four of the microsats on this launch vehicle measures 9" by 9" (230 cm), very small!

LUSAT - Is sponsored by AMSAT-LU of Argentina. It is a twin to Pacsat.

NUSAT - Is a project of Weber State University in Utah and AMSAT-NA. It will carry an experimental digitized video (TV) camera.

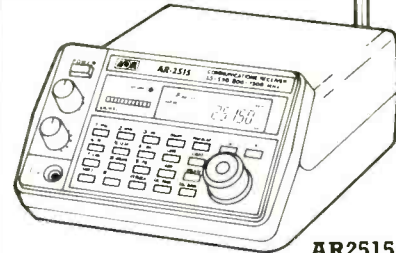
DOVE - Of all the satellites in this fleet Dove is my favorite for two reasons. Though it is identical in size it carries a voice synthesizer which will do two things; give telemetry information about the satellite's condition in English and broadcast messages from school children from around the world on the peaceful use of space. These messages will be broadcast in three languages, English, Portuguese and Russian. We'll take a close look at Dove next month.

AMSAT is an international organization of volunteers. Their common interest is space. While many of AMSAT's members are Amateur Radio Operators and SWL's many others are teachers, scientists and engineers, they are making things happen in the space program. No matter what your interest in space, AMSAT is an organization worthy of your support. You will find AMSAT affiliates in the following countries: Brazil (BRAMSAT), United Kingdom (AMSAT-UK), Japan (JASAT), Italy (ITAMSAT), Germany (AMSAT DL), Argentina (AMSAT-LU). The Soviet Union is even considering a AMSAT-UA.

AMSAT provides its members with an opportunity to learn about, support and take part in the Amateur space program. Your membership brings you a space supporter certificate, monthly newsletter and a catalog of computer programs for tracking satellites, books, video tapes, patches and decals and information to keep you updated and active in the hobby. **PC**

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CIRCLE 54 ON READER SERVICE CARD

THE MONITORING MAGAZINE

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Beaming In (from page 4)

City. There were three stations on the air then, NBC, CBS, and DuMont, and they operated only for a few hours per night. Newspapers refused to run the schedules for fear of offending movie theatres, so stations sent out postcards containing their weekly schedules. Or, you could call the stations on the phone and they'd tell you what was on that night.

As soon as we got our TV, our household became the focal point of numerous relatives, friends, neighbors, and my father's business associates who wanted to see for themselves what all the fuss was about. Several nights each week we had a house full of guests who would sit transfixed while straining to watch whatever happened to be on, be it a travelogue, amateur talent program, wrestling, an old movie, or whatever.

The family set was a 6-inch Transvision that my dad bought directly from the factory. Scarcely a night went by when he didn't feel the need to remove the set from its cabinet and spend time poking around at its innards to get it working the way he felt it should. He did this early in the evening, and as show time approached, the family had to begin assuring him that the picture looked fine and would he just put it back in its cabinet. He didn't know anything about television sets, and sometimes the set wouldn't work when he got it reassembled.

The Transvision Company was always happy to exchange our dead TV's with a

seemingly endlessly supply of replacement sets. I'm almost certain that they considered our house to be an important demo center for their TV's. Indeed, many who saw TV for the first time at our house were so impressed that they wanted to know where to buy one. Next day they drove over to the Transvision factory and plunked down \$200 for one.

Of course, we didn't get a sales commission. Neither did Transvision offer to supply the pretzels, chips, peanuts, fruit, or soda that our guests enjoyed during the nightly showings. My mom felt that, at the very least, we should have asked them to send over people to help carry chairs and empty the ashtrays after the jovial crowd departed.

The usual scene after everybody left was dad getting ready to disassemble the set for the following evening's adjustment, tuning, and repair session.

With all due respects to Nipkow, to Farnsworth's 1928 patent, and RCA's 1939 entry into the world of modern TV, I think of TV's birthday as that evening in September of 1946 when my dad walked into the house carrying a large box marked "Transvision." I'm sure that anybody old enough to recall the day when their family got its very first TV set—whether it was 1948, 1950, or even later—considers TV's "real birthday" to be the day their set showed up and was gently located in the living room's place of honor where once the family radio had stood. **PC**



Gen. Sarnoff's televised speech at the 1939 N.Y. World's Fair has been incorrectly and unfairly hyped as the start of TV. The real TV pioneers were all shoved off screen.

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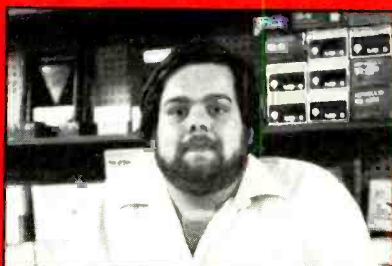
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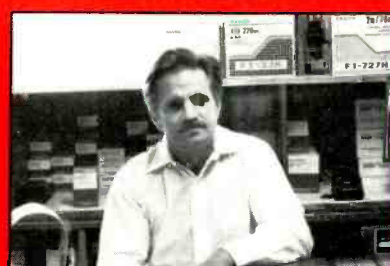
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REGENCY MA-917 Ni-Cad Battery for HX1000/1200	24.99 (*)
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REGENCY MA-549 Drop In charger for HX1000/1200	29.99 (5.00)
REGENCY MX-3000 AC/DC Digital Scanner	149.99 (7.00)
REGENCY Z-60 AC/DC Digital Scanner	109.99 (7.00)
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REGENCY UC-102 Hi-VHF Hand Transceiver	124.99 (5.50)
REGENCY RH-606B High Band Transceiver w/Ant	469.99 (9.00)
REGENCY R806 AC/DC Crystal Scanner	79.99 (6.00)
REGENCY INF-3 AC Informant Receiver	139.99 (7.00)
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ANT-6 Base Scanner Antenna w/50' cable	29.99 (4.00)
REGENCY CB-ONE CB Radio	34.99 (5.00)



Z60

60 Channel Automatic Programmable Scanner

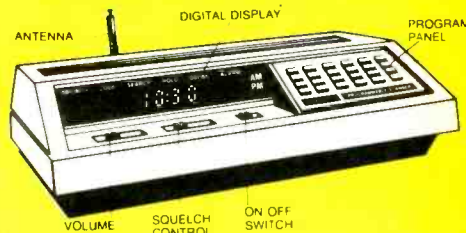
Includes Public Service and Aircraft Bands

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The Regency Z-60 is a compact, programmable 60 channel multi band FM monitor receiver for use at home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands: 30-50, 118-136, 144-174, and 440-512 MHz. Size 10 3/4" W x 2 7/8" H x 8 3/8" D.

Sophisticated microprocess-controlled circuitry eliminates the need for crystals. Instead, the frequency for each channel is programmed through the numbered keyboard similar to the one used on a telephone. A "beep" acknowledges contact each time a key is touched. The Z60 scans approximately 15 channels per second.

Any combination of channels can be scanned automatically, or the unit can be set on manual for continuous monitoring of any one channel. In addition, the search function locates unknown frequencies within a band.

Other features include scan delay, priority and a bright/dim switch to control the brightness of the 9-digit Vacuum-Fluorescent display. The Z60 can be operated on either 120VAC or 12 VDC. Includes one year warranty from Regency Electronics (optional 3 yr extended warranty only \$39.99, gives you a total of 4 yrs complete warranty or 2 yr extended warranty only \$29.99, gives you a total of 3 yrs complete warranty.)



UNIDEN Bearcat BC-600 XLT

\$199.99 (\$7.00 shipping)

Digital Programmable 100 Channel Scanner

BC 600 XLT covers the following frequencies: 29.54 MHz, 118-174 MHz, 406-512 MHz. Features include: priority memory backup, channel lockout, bank scanning, key lock, AC/DC power, cords, telescopic antenna, mounting bracket supplied one year factory warranty, search direct channel access, track tuning, service search including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather, and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$24.99 plus a C/CSS tone board is available for only \$59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #600MPC \$4.99.

BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954mhz.

\$249.99 (\$7.00 shipping)

BEARCAT 70XLT

20 CHANNEL HAND-HELD SCANNER

Small size 6"Hx1"Dx2 3/4"W. Full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29.54mhz, 136.17mhz, 406.512mhz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger, and carry case.

SPECIAL PACKAGE DEAL \$169.99 (\$6.00 shipping each)

SCANNER WORLD EXCLUSIVE UNIDEN BEARCAT BC205XLT

\$259.99 (7.00 shipping each)

Digital programmable 200 Channel hand-held portable scanner with raised button keyboard for easy programming of the following frequency ranges: 29.54MHz, 118-175MHz, 406-512MHz, 806-956MHz. Features include: Scan delay, memory backup, key pad lock, 3 digit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna, carry case are all included. Size is 2 1/16" H x 1 3/8" D x 1 1/2" W. High. Optional extended 2 yr warranty \$59.99, 3 yr extended warranty \$79.99.



SCANNER WORLD SPECIAL

COBRA SR-925 \$99.99

(plus \$7.00 shipping each)



Digital programmable, 16 channel, AC/DC mobile/base, with raised button keyboard for easy programming of the following frequency ranges: 29.54mhz, 118.174mhz, 406.512mhz. Covering aircraft, marine, police, fire, weather, trans, public service, plus much more. Features include: digital display, priority, scan delay, weather, button, channel lockout, search, scan speed, automatic squelch, memory backup, one year factory warranty, external speaker jack. (Extended warranty 2 years extra \$29.99, 3 years extra \$39.99.)

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R-5000

R-2000
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Scan the entire frequency range from 100 kHz to 905 MHz with Kenwood's R-5000, R-2000 and RZ-1. Listen in on foreign music, news, and commentary. Monitor local police, fire, and other public safety services, as well as the Marine channels, and the many other services 50 MHz and above.

(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection



R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

Optional Accessories

R-2000:

• VC-10 VHF converter • DCK-1 DC cable kit for 12 volt DC use.

R-5000:

• 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 • HS-7 Mini-headphones.

super easy! Other useful features include programmable scanning large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

RZ-1

Wide-band scanning receiver



The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening

easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, switchable AGC, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory

• PG-2N Extra DC cable

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CIRCLE 41 ON READER SERVICE CARD