

POPULAR COMMUNICATIONS

DECEMBER 1985 \$1.95
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The Latest In Satellite TV Products

- Radio's Mysterious "Rock Bottom"
- Broadcasting On A Remote Island
- Visit To A CIA "Secret" Broadcaster
- Tokyo Rose: Traitor Or Victim?
- Phone Equipment As Holiday Gifts

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KENWOOD

...pacesetter in Amateur radio

Scan the World



R-2000

All-mode receiver.

- Covers 150 kHz—30 MHz in 30 bands.
- All mode: USB, LSB, CW, AM, FM.
- Digital VFO's. 50-Hz, 500-Hz or 5-kHz steps. F. LOCK switch.
- Ten memories store frequency, band, and mode data. Each memory may be tuned as a VFO.
- Lithium batt. memory back-up.
- Memory scan.
- Programmable band scan.
- Fluorescent tube digital display of frequency (100 Hz resolution) or time.
- Dual 24-hour quartz clocks, with timer.
- Three built-in IF filters with NARROW/WIDE selector switch. (CW filter optional.)
- Squelch circuit, all mode, built-in.
- Noise blanker built-in.
- Large front mounted speaker.
- RF step attenuator. (0-10-20-30 dB.)
- AGC switch. (Slow-Fast.)
- "S" meter, with SINPO scale.
- High and low impedance antenna terminals.
- 100/120/220/240 VAC operation.
- RECORD output jack.
- Timer REMOTE output (not for AC power).
- Muting terminals.

Specifications and prices subject to change without notice or obligation.



R-1000

High performance receiver • 200 kHz-30 MHz in 30 bands • AM, CW, SSB • 3 IF filters • noise blanker • RF attenuator • S-meter • 120-240 VAC • muting terminals • built-in speaker • digital display/clock/timer



R-600

General coverage receiver • 150 kHz-30 MHz in 30 bands • AM, CW, SSB • IF filters • noise blanker • RF attenuator • S-meter with SINPO scale • front mounted speaker • 3 antenna inputs • 100-240 VAC operation • record jack • muting terminals • digital display

Optional accessories:

- VC-10 V-F converter for R-2000 covers 118-174 MHz
- YG-455C 500 Hz CW filter for R-2000
- HS-4 Headphones
- HS-5 Deluxe headphones
- HS-6 Lightweight headphones
- HS-7 Micro headphones
- DCK-1 DC cable kit for 13.8 VDC operation
- AL-2 Lightning and static arrester
- Service manuals are available for all receivers and most accessories.

Additional information on Kenwood all-band receivers is available from authorized dealers.

KENWOOD

TRIO-KENWOOD COMMUNICATIONS
1111 West Walnut Street
Compton, California 90220

CIRCLE 139 ON READER SERVICE CARD

"The Largest Dealer of Scanners in the World"



SCANNER WORLD, USA

10 New Scotland Ave., Albany, NY 12208 518/436-9606

Special SALE!

The Regency Z30

30 Channel Automatic/Programmable Scanner

Z30 FEATURES:

- 30 Channels—For full coverage and easy selection.
- No Crystals Required—Your choice of over 15,000 frequencies just by pushing a raised type button on the keyboard face.
- 6 Bands—Covers high and low VHF, UHF and UHF "T" plus two FM Ham Bands.
- Search or Scan—Scan frequencies you have entered or search for exciting new frequencies.
- Priority Control—Automatically overrides all other calls to listen to your favorite frequency.
- Alarm Clock—Quartz Clock with programmable alarm.
- Permanent Backup System—Memory requires no batteries. Capacitor saves frequencies entered up to one week during power outage or storage.
- Dual Level Display—Selects brightness level of green vacuum fluorescent digital display.
- Channel Lockout—Skips channels not of current interest.
- Scan Delay—Lets you set a delay so that replies to calls will be heard before scanning resumes.
- Display Messages—Display flashes verbal messages to aid in programming.
- External Antenna Jack—Permits maximum reception
- External Speaker Jack—Standard connection allows use of external speaker.
- AC or DC—Use at home or on the go. AC Home Power Cord Included.
- Telescoping Antenna—Electronically optimized for all frequencies, included.
- UL Listed/FCC Certified Assurance of quality, American made design and manufacturer, made in USA.

Suggested Factory List Price \$279.95

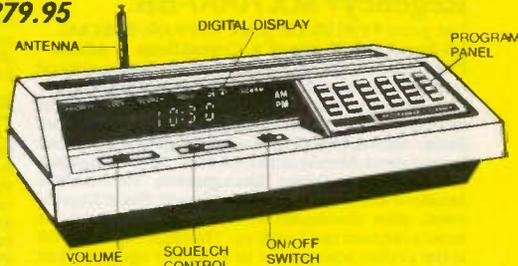
Scanner World Special

\$129.99

(plus \$5.50 shipping each)

REGENCY Z30

Optional accessories:
Cigarette Lighter Plug RGMPC \$4.95
Z Mobile Bracket \$9.99



The Regency Z30 is a compact, programmable 30 channel, multi band, FM monitor receiver for use at home or on the road. It is double conversion, superheterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands: 30-50, 144-174, and 440-512 MHz. Size 10 3/4" Wx2-7/8" Hx8-3/8" 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 Z30 scans approximately 15 channels per second.

Any combination of two to thirty 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 Z30 can be operated on either 120 VAC or 12VDC. Includes one year warranty from Regency Electronics. (3 year extended warranty only \$35.00, gives you a total of 4 years complete warranty), or 2 year extended warranty only \$25.00, gives you a total of 3 years complete warranty.)

CIRCLE 78 ON READER SERVICE CARD

EXTENDED WARRANTY PROGRAM 2 EXTRA YEARS — ONLY \$25.00

Scanner World is pleased to offer extended warranty protection on your scanner purchases. For a one time charge of only \$35.00, we will provide you with 3 additional years of warranty protection after your original warranty expires. Extended warranty program is available for all types of electronics such as two-way radios, scanners, TVs, VCR, 35mm cameras, personal computers, CBs, radar detectors, stereo equipment, etc. Scanner World can offer this program to all customers, even if product was not purchased from Scanner World. All we need is a copy of your invoice showing purchase within last 30 days. For more information and rates, refer to our 1985 Winter Catalogue or drop us a note.

BEARCAT 50XL Programmable Hand-Held	124.99	(5.00)
BEARCAT 140 AC Programmable Scanner	94.99	(5.00)
BEARCAT 145XL AC Programmable Scanner	104.99	(5.00)
BEARCAT 170 AC Digital Scanner	149.99	(5.00)
BEARCAT 175XL AC Digital Scanner	159.99	(5.00)
BEARCAT 100XL Digital Hand Held	214.99	(6.50)
BEARCAT 210XW AC/DC Digital Scanner	214.99	(6.50)
BEARCAT 5 AC Crystal Scanner	86.99	(4.00)
BEARCAT Five-Six Crystal, hand-held	126.99	(4.00)
BEARCAT 15 AC/DC Crystal Scanner	99.99	(5.00)
BEARCAT 180 AC Digital Scanner	159.99	(4.00)
BEARCAT 200 AC Digital Scanner	172.99	(5.00)
BEARCAT 20/20 AC/DC Digital Scanner	249.99	192.99
BEARCAT 260 AC/DC Digital Scanner	239.00	(6.00)
BEARCAT 300 AC/DC Digital Scanner	294.99	(7.00)
BEARCAT 800 XLT AC/DC Digital Scanner	319.99	(6.00)
BEARCAT DX-1000 Shortwave Receiver	499.99	(12.00)
REGENCY D-310 AC/DC Digital Scanner	129.99	(4.50)
REGENCY HX-1000 Digital Hand Held	204.99	(6.50)
REGENCY MA-258 Battery Pack For HX-1000	\$21.99	(3.00)
REGENCY MA-256 Drop in Charger for 1000	69.99	(3.50)
REGENCY HX-2000 Digital Hand Held	299.99	(6.50)
REGENCY MX-3000 AC/DC Digital Scanner	198.99	(6.50)
REGENCY MX-4000 AC/DC Digital Scanner	319.99	(6.50)
REGENCY MX-5000 AC/DC Digital Scanner	349.99	(6.50)
REGENCY MX-7000 AC/DC Digital Scanner	399.99	(7.00)
REGENCY Z-10 AC/DC Digital Scanner	146.99	(5.00)
REGENCY Z-30 AC/DC Digital Scanner	129.99	(5.50)
REGENCY Z-45 AC/DC Digital Scanner	209.99	(5.00)
REGENCY Z-60 AC/DC Digital Scanner	239.99	(5.50)
Mobile Mounting Bracket For Z Scanner	9.99	(3.00)
REGENCY D-810 AC Digital Scanner	182.99	(5.50)
REGENCY R-1050 AC Programmable Scanner	114.99	(5.00)
REGENCY C-403 AC Crystal Scanner	66.99	(4.00)
REGENCY ACTR-106 AC/DC Crystal Scanner	96.99	(4.50)
REGENCY ACTR-1 AC/DC Crystal Single Channel	75.99	(4.00)
REGENCY RH-256 High Band Transceiver	399.99	(7.75)
RCD MRP-1 Single Channel Hand Held	38.99	(3.00)
JIL SX-200 AC/DC Digital Scanner	159.99	(6.75)
JIL SX-400 DC Digital Scanner	479.99	(12.00)
FANON M8HLU DC Crystal Scanner	99.99	(4.00)
Fanon PSK-1 AC Adapted for M8HLU	12.99	(3.00)
Fanon Slim-6 HLU Crystal Hand-Held Scanner	103.99	(4.00)
FOX BMP-1060 AC/DC Digital Scanner	149.99	(5.50)
FOX Mounting Bracket for BMP-1060	9.99	(3.00)
Whistler Spectrum Radar Detector	199.99	(5.00)
Whistler Remote Spectrum Radar Detector	199.99	(5.00)

REGENCY HX1000 • Hand-Held

Programmable, 30 Channel, Hi-Lo UHF, Package includes charger/adaptor, Ni-Cad battery, Carry Case, Rubber Antenna. Complete package only...

\$204.99 (6.50 shipping)

(3 year extended warranty only \$35.00, 2 year \$25.00)

REGENCY RH-256 B

PROGRAMMABLE TRANSCEIVER

RH-256B Transceiver, 16 channel 12 VDC 2-way Radio fully programmable in transmit and receive mode. Includes built-in CTCSS tones for encode/decode, time-out timer, scan delay, 25 watts transmit power, priority, plus more. Frequency spread as shipped 152-158 MHz. Package includes mobile mike, bracket, mobile antenna, and all cables and instructions for installation. **Special package deal only: \$399.99 (7.75 shipping)**

(2 year extended warranty \$49.00 — 3 year \$69.00)

Super Special Package Sale

REGENCY HX-650

Pocket Scanner

6 CHANNELS — 4 BANDS

VHF-Low	30 to 50 MHz
VHF-High	146 to 174 MHz
UHF	450 to 470 MHz
UHF-T	470 to 512 MHz
Small Size	3 3/4" Wx5 1/2" Hx1" D

Quality features included in the Regency HX-650 are 6 channels - 4 band coverage, lockout switches, manual step switch, scanning speed of 15 channels per second, long lasting LED's, volume & squelch controls, AC adapter/charger jacks.

Scanner World's Special Package Deal

Includes the following:

- Regency HX-650 Pocket Scanner
- MA-506 Carry Case
- Set of 4AAA Nickel Cadmium Batteries
- 6 Monitor Crystals (specify frequencies needed or we will include certificates for unknown frequencies)
- Flexible Rubber Duckey Antenna

Scanner World Package Price

\$109.99

(Plus \$5.50 Shipping)

Bearcat 100 XL

\$214.99 (6.50 shipping) Handheld digital programmable, no crystal portable scanner. 16 channels, search feature, plus more! Frequency range: 30-50, 118-174, 406-512 MHz. Included in the package is a flexible rubber antenna, earphone, battery charger/AC adapter, 6 AA Ni-Cad rechargeable batteries and a heavy duty carry case. All for the low price of:

(3 year extended warranty only \$35.00) **\$214.99** (6.50 shipping)

JIL SX-200 • AC/DC

High-Low-UHF-Aircraft-16 Channel

only **\$158.99** (6.75 shipping)

Ordering Information

Call (518) 436-9606 to place orders by phone or mail orders to Scanner World, 10 New Scotland Ave., Albany, NY 12208. Orders will be shipped same day received by United Parcel Service. Scanner World accepts VISA, MasterCard, G.O.D. shipments by United Parcel with personal or business checks only. Mail orders with bank clearance. Orders with cashiers checks or money orders shipped same day received. Prices, specifications and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World warehouse in Albany, NY. We are not responsible for typographical errors. All merchandise carries full manufacturers warranty. Bid Proposals and Purchase orders accepted from Government agencies. Free full line catalogue available upon request. No minimum order. New York State Residents add 7% sales tax. Dealers send business letterhead for dealer wholesale information.

SHIPPING CHARGES

Add (\$5) per scanner, and \$3.00* for all accessories ordered at same time. C.O.D. shipments will be charged an additional \$3.00 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service. Shipping charges are for continental USA only. Outside of continental USA, add \$15.00 per scanner.

Scanner World, USA

10 New Scotland Ave., Albany, NY 12208

(518) 436-9606

Most orders Shipped Same Day Received!

NEW! Lower Price Scanners

Communications Electronics,TM
the world's largest distributor of radio
scanners, introduces new lower prices
just in time for the holiday season.

Regency® MX7000-BB

List price \$699.95/CE price \$379.00/SPECIAL
10-Band, 20 Channel • Crystalline • AC/DC
Frequency range: 25-550 MHz, continuous coverage
and 800 MHz, to 1.3 GHz, continuous coverage
The Regency MX7000 scanner lets you monitor
military, F.B.I., Space Satellites, Police and Fire
Departments, Drug Enforcement Agencies, Defense
Department, Aeronautical AM band, Aero Navigation
Band, Fish & Game, Immigration, Paramedics,
Amateur Radio, Justice Department, State Depart-
ment, plus thousands of other radio frequencies
most scanners can't pick up. The Regency MX7000
is the perfect scanner for intelligence agencies that
need to monitor the new 800 MHz cellular telephone
band. The MX7000, now at a special price from CE.

Regency® MX4000-BB

List price \$629.95/CE price \$279.00/SPECIAL
Multi-Band, 20 Channel • No-crystal scanner
Search • Lockout • Priority • AC/DC
Selectable AM-FM modes • LCD display
Bands: 30-50, 118-136, 144-174, 440-512, 800-950 MHz
The Regency MX4000 is gives coverage in the
standard VHF and UHF ranges with the impor-
tant addition of the 800 MHz, and aircraft bands.
It features keyboard entry, multifunction liquid
crystal display and variable search increments.

Regency® Z60-BB

List price \$379.95/CE price \$199.00/SPECIAL
8-Band, 60 Channel • No-crystal scanner
Bands: 30-50, 88-108, 118-136, 144-174, 440-512 MHz
Cover your choice of over 15,000 frequencies
on 60 channels at the touch of your finger.

Regency® RH250-BB

List price \$613.00/CE price \$329.00/SPECIAL
10 Channel • 25 Watt Transceiver • Priority
The Regency RH250B is a ten-channel VHF land
mobile transceiver designed to cover any fre-
quency between 150 to 162 MHz. Since this
radio is synthesized, no expensive crystals are
needed to store up to ten frequencies without
battery backup. All radios come with CTCSS
tone and scanning capabilities. A monitor and
night/day switch is also standard. This trans-
ceiver even has a priority function. The RH250
makes an ideal radio for any police or fire
department volunteer because of its low cost
and high performance. A UHF version of the
same radio called the RU150B covers 450-482
MHz, but the cost is \$449.00. To get technician
programming instructions, order a service man-
ual from CE with your radio system.

NEW! Bearcat® 50XL-BB

List price \$199.95/CE price \$129.00/SPECIAL
10-Band, 10 Channel • Handheld scanner
Bands: 29.7-54, 136-174, 406-512 MHz.
The Uniden Bearcat 50XL is an economical,
hand-held scanner with 10 channels covering
ten frequency bands. It features a keyboard lock
switch to prevent accidental entry and more.
Also order part # B5 which is 5 AA ni-cad
batteries for \$13.00, a plug in wall charger, part
AD100 for \$14.95 and also order optional
cigarette lighter cable part # PS001 for \$14.95.

NEW! JIL SX-400-BB

List price \$799.95/CE price \$469.00/SPECIAL
Multi-Band, 20 Channel • No-crystal Scanner
Search • Lockout • Priority • AC/DC
Frequency range: 26-520 MHz, continuous coverage.
With optionally equipped RF converters 150KHz-3.7 GHz.
The JIL SX-400 synthesized scanner is designed for
commercial and professional monitor users that de-
mand features not found in ordinary scanners. The SX-
400 will cover from 150 KHz to 3.7 GHz with RF
converters. Order the following RF converters for your
SX-400 scanner. **RF-1030-BB** at \$234.00 each for
frequency range 150 KHz - 30 MHz USB, LSB, CW and
AM. (CW filter required for CW signal reception); **RF-
5080-BB** at \$194.00 each for 500-800 MHz; **RF-8014-BB**
at \$194.00 each for 800 MHz-1.4 GHz. Be sure to
also order **ACB-300-BB** at \$99.00 each which is an
antenna control box for connection of the RF converters.
The **RC-4000-BB** data interface at \$259.00 each gives
you control of the SX-400 scanner and RF converters
through a computer. Add \$3.00 shipping for each RF
converter, data interface or antenna control box. If you
need further information on the JIL scanners, contact
JIL directly at 213-926-6727 or write JIL at 17120
Edwards Road, Cerritos, California 90701 U.S.A.

SPECIAL! JIL SX-200-BB

List price \$499.95/CE price \$154.00/SPECIAL
Multi-Band - 16 Channel • No-Crystal Scanner
Frequency range: 26-88, 108-180, 380-514 MHz.
The JIL SX-200 has selectable AM/FM receiver circuits,
tri-switch squelch settings -signal, audio and signal &
audio, outboard AC power supply - DC at 12 volts built-
in, quartz clock - bright vacuum fluorescent blue read-
outs and dimmer, dual level search speeds, tri-level scan
delay switches, 16 memory channels in two channels
banks, receive fine tune (RT) ± 2KHz, dual level RF gain
settings - 20 db pad, AGC test points for optional signal
strength meters all for this special price.

Regency® HX1000-BB

List price \$329.95/CE price \$189.00/SPECIAL
6-Band, 30 Channel • No Crystal scanner
Search • Lockout • Priority • Scan delay
Sidelit liquid crystal display • Digital Clock
Frequency range: 30-50, 144-174, 440-512 MHz.
The new handheld Regency HX1000 scanner is fully
keyboard programmable for the ultimate in versatili-
ty. You can scan up to 30 channels at the same time.
The LCD display is even sidelit for night use. Order
MA-256-BB rapid charge drop-in battery charger
for \$68.95 plus \$3.00 shipping/handling, includes
wall charger, carrying case, belt clip, flexible antenna
and nicad battery. Order now.

NEW! Bearcat® 100XL-BB

List price \$349.95/CE price \$209.00/SPECIAL
9-Band, 16 Channel • Priority • Scan Delay
Search • Limit • Hold • Lockout • AC/DC
Frequency range: 30-50, 118-174, 406-512 MHz.
The world's first no-crystal handheld scanner now has
a LCD channel display with backlight for low light use
and aircraft band coverage at the same low price. Size is
1 3/4" x 7 1/2" x 2 1/2". The Bearcat 100XL has wide frequency
coverage that includes all public service bands (Low,
High, UHF and "T" bands), the AM aircraft band, the 2-
meter and 70 cm. amateur bands, plus military and
federal government frequencies. Wow... what a scanner!
Included in our low CE price is a sturdy carrying case,
earphone, battery charger/AC adapter, six AA ni-cad
batteries and flexible antenna. Order your scanner now.

NEW! Regency® HX2000-BB

The World's First 800 MHz. Handheld Scanner
List price \$569.95/CE price \$244.00/SPECIAL
7-Band, 20 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Sidelit liquid crystal display • Memory backup
Bands: 118-136, 144-174, 440-512, 800-950 MHz.
The HX2000 scanner operates on 120V AC or 6 VDC.
Scans 15 channels per second. Size 3" x 7" x 1 1/2".
Includes wall charger, carrying case, belt clip, flexible
antenna and nicad batteries. Selectable AM/FM modes.

SPECIAL! Bearcat® DX1000-BB

List price \$649.95/CE price \$339.00/SPECIAL
Frequency range 10 KHz. to 30 MHz.
The Bearcat DX1000 shortwave radio makes tuning
in London as easy as dialing a phone. Features PLL
synthesized accuracy, two time zone 24 hour digital
quartz clocks and more. Add \$12.00 for shipping.

NEW! Bearcat® 800XLT-BB

List price \$499.95/CE price \$294.00/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".

OTHER RADIOS AND ACCESSORIES

Panasonic RF-2600-BB Shortwave receiver	\$179.95
Panasonic RF-B300-BB Shortwave receiver	\$195.95
RD95-BB Uniden Remote mount Radar Detector	\$139.95
RD55-BB Uniden Visor mount Radar Detector	\$119.95
BC 20/20-BB Bearcat 40 channel scanner SALE	\$224.95
BC 210XW-BB Bearcat 20 channel scanner SALE	\$209.95
BC 260-BB Bearcat 16 channel scanner SALE	\$194.95
BC 300-BB Bearcat 50 channel scanner SALE	\$254.95
BC-WA-BB Bearcat Weather Alert	\$39.95
DX1000-BB Bearcat shortwave receiver SALE	\$339.00
PC22-BB Uniden remote mount CB transceiver	\$99.95
PC65-BB Uniden mobile mount CB transceiver	\$59.95
Z45-BB Regency 45 channel scanner SALE	\$169.95
R1060-BB Regency 10 channel scanner	\$98.95
MX3000-BB Regency 30 channel scanner	\$189.95
C403-BB Regency 4 channel scanner SALE	\$65.95
R108-BB Regency 10 channel scanner	\$99.95
RH250B-BB Regency 10 channel VHF transceiver	\$329.00
RU150B-BB Regency 10 channel UHF transceiver	\$449.00
RPH410-BB 10 ch. handheld no-crystal transceiver	\$399.00
BC10-BB Battery charger for Regency RPH410	\$79.95
MA256-BB Drop-in charger for HX1000 scanner	\$68.95
MA257-BB Cigarette lighter cord for HX1000	\$19.95
MA917-BB Ni-Cad battery pack for HX1000	\$29.95
EC10-BB Programming tool for Regency RPH410	\$20.00
SMRH250-BB Service man. for Regency RH250	\$20.00
SMRU150-BB Service man. for Regency RU150	\$20.00
SMRPH410-BB Service man. for Regency RPH410	\$20.00
SMMX7000-BB Svc. man. for MX7000 & MX5000	\$20.00
SMMX3000-BB Service man. for Regency MX3000	\$20.00
B-4-BB 1.2 V AAA Ni-Cad batteries (set of four)	\$9.00
A-135C-BB Crystal certificate	\$3.00
FB-E-BB Frequency Directory for Eastern U.S.A.	\$12.95
FB-W-BB Frequency Directory for Western U.S.A.	\$12.95
TSG-BB "Top Secret" Registry of U.S. Govt. Freq.	\$15.00
TIC-BB Techniques for Intercepting Comm.	\$15.00
RRF-BB Railroad frequency directory	\$10.00
CIE-BB Covert Intelligent. Elect. Eavesdropping	\$15.00
A60-BB Magnet mount mobile scanner antenna	\$35.00
A70-BB Base station scanner antenna	\$35.00
USAMM-BB Mag mount VHF/UHF ant. w/ 12' cable	\$39.95
USAK-BB 3/4" hole mount VHF/UHF ant w/ 17' cable	\$35.95
USATLM-BB Trunk lip mount VHF/UHF antenna	\$35.95
Add \$3.00 shipping for all accessories ordered at the same time.	
Add \$12.00 shipping per shortwave receiver.	
Add \$7.00 shipping per scanner and \$3.00 per antenna.	

BUY WITH CONFIDENCE

To get the fastest delivery from CE of any scanner,
send or phone your order directly to our Scanner
Distribution Center. Michigan residents please add 4%
sales tax or supply your tax ID number. Written pur-
chase orders are accepted from approved government
agencies and most well rated firms at a 10% surcharge
for net 10 billing. All sales are subject to availability,
acceptance and verification. All sales on accessories
are final. Prices, terms and specifications are subject to
change without notice. All prices are in U.S. dollars. Out
of stock items will be placed on backorder automatically
unless CE is instructed differently. A \$5.00 additional
handling fee will be charged for all orders with a
merchandise total under \$50.00. Shipments are F.O.B.
Ann Arbor, Michigan. No COD's. Most products that we
sell have a manufacturer's warranty. Free copies of
warranties on these products are available prior to
purchase by writing to CE. Non-certified checks require
bank clearance.

Mail orders to: Communications Electron-
ics,™ Box 1045, Ann Arbor, Michigan 48106
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For Canada, Puerto Rico, Hawaii, Alaska, or
APO/FPO delivery, shipping charges are three
times continental U.S. rates. If you have a Visa
or Master Card, you may call and place a credit
card order. Order toll-free in the U.S. Dial
800-USA-SCAN. In Canada, order toll-free by
calling 800-221-3475. Telex CE anytime, dial
810-223-2422. If you are outside the U.S. or in
Michigan dial 313-973-8888. Order today.

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‡ Regency is a federally registered trademark of Regency
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Regency
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MX4000

HX2000

MX7000

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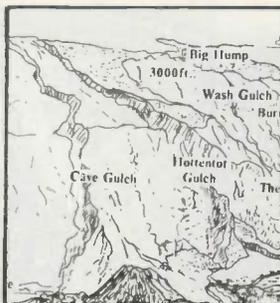
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Larry Mulvehill, WB2ZPI
Contributing Photographer

POPULAR COMMUNICATIONS

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VOL. 4, NO.4



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by Alice Brannigan

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It's a bird. It's a plane. No, it's a TV satellite. And here are some new products for watching their transmissions.

This month's cover: Stan Mitchell, Engineer at Southstar, Davie, Florida. Photo by Larry Mulvehill, WB2ZPI.

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AN EDITORIAL

For at least a year I've been receiving an increasing amount of mail from persistent readers who are more than slightly interested in seeing POP'COMM attempt to cause our readers to activate in any of several favorite "causes" or proposed battles.

One especially vocal group cries out against the verification (QSL) policies of certain broadcasters. They claim that Radio Finland's policies are poor; Radio Australia is only a so-so QSL'er; Radio Lebanon is wishy-washy; the Ghana Broadcasting Corp. is fading away; Radio Botswana is a complete dud. And so it goes with many broadcasters, large and small—this one is too slow, that one ignores three out of every four reception reports sent. The cry goes up that we cease giving any mention of the frequencies and schedules of such stations. Others go so far as to insist that we rally our readers into supporting a listener's boycott of the stations!

Other readers have suggested (or demanded) that we organize listener boycotts against stations located in nations with political, religious, or cultural activities with which they disagree or disapprove. Some

Voice Of Protest?



A happy holiday season from the POP'COMM "shack" to yours!

have also felt that we might endorse a proposal for Ham operators in North America to boycott two-way contacts with operators in those nations.

Perhaps at first glance these ideas sound both useful and effective. The more one thinks about them, no matter how well intentioned and motivated they may be, they are not quite as clever as they sound. Also, they aren't very new—more than 50 years ago listeners boycotted Rome's shortwave stations in the hopes of improving their QSL'ing policies. Things did improve, but only when the Italian Government decided it was in their best interest for reasons that had nothing to do with the boycott.

DX'ing should be a relaxing and enjoyable avocation. It presents a unique, exciting, and adventuresome opportunity to sit in the comfort of your own home and connect directly with people having widely divergent lifestyles, cultures, religious and political philosophies. There is no requirement that the DX'er envy those lifestyles and cultures, or agree with and endorse the religions and political philosophies encountered.

POP'COMM is dedicated to disseminating news and information intended to help our readers tune in as many broadcasters and nations as possible. The thought that we might deliberately and systematically begin removing selected stations and nations from our pages is rather absurd and completely counter to the purposes of our publication. We feel that the majority of our readers look to us to be a source of information. It's our hope that they will use the information to monitor as many stations as they wish, without any need for us (or anybody else) to dictate what they shouldn't hear. It immediately conjures up visions of Hitler's Germany or Castro's Cuba where the government's de-

(Continued on page 70)

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The most interesting questions we receive will be answered here in each issue. Address your questions to: Tom Kneitel, Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801.

A Young Man From Nantucket

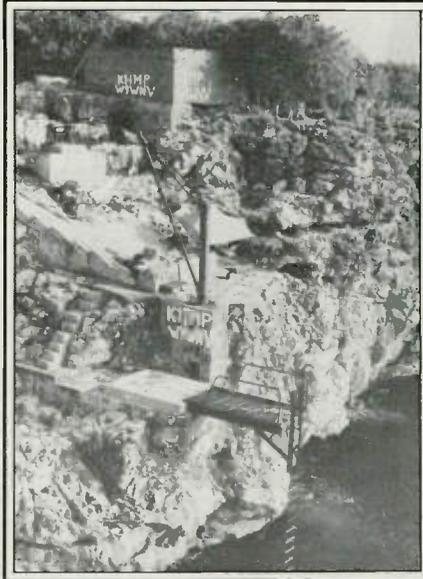
In the November issue you ran two great stories on Radio Marti and Radio Swan. This made me realize that R. Marti wasn't established on Swan Island because we eventually turned the island over to Honduras. But wouldn't Radio Marti have sounded louder in Cuba if it had been located on Navassa? Lying between Haiti and Cuba, it's much closer to Cuban audiences than Florida.

Billy Pendergast
Nantucket, MA

Navassa is a tiny (two mile long) U.S.-owned speck in the Caribbean. It has an automatic lighthouse, abandoned railroad tracks, some wild goats, and no inhabitants. On every side it has steep (100 to 200 ft.) cliffs facing the sea, and the cliffs continue down underwater for another 100 ft. The only possible landing spot is Lulu Bay, where the cliffs indent slightly and lower to 50 ft., with a tiny platform and steel rope ladder hanging out over the churning sea. The USCG goes to Navassa once in a while to perform maintenance on the lighthouse beacon, and once in a while Hams are granted USCG permission for a DXpedition to Navassa (KC4 prefix—it counts as a separate country), but getting ashore with equipment has proven a monumental and dangerous task. This may be one reason why Navassa hasn't been attractive as a broadcasting platform. Besides, the signals from the Florida Keys seem potent enough in Cuba to keep the USIA happy.

Interestingly, in the aftermath of the uproar about Radio Swan's participation in the Bay of Pigs, and the station's alleged CIA-connection, in 1961 I decided to write to broadcast equipment manufacturers asking for price quotes for establishing a station on Navassa. Using a company letterhead as a blind, I asked about a 50 kW transmitter and two 250-ft. towers to be delivered to Navassa. Several manufacturers didn't beat around the bush and bluntly asked if this was to be "a covert federal operation." Most were enthusiastically offering to set up appointments with their sales engineers.

Eventually the FCC got wind of these inquiries and began asking for some "clarification" of our "intentions" on Navassa Island, pointing out that Navassa was U.S.-owned and one does not casually set up a broadcasting station in the USA without a proper license—and it didn't seem too likely that such a license would be issued for Navassa operation. This was a curious re-



Navassa's Lulu Bay presents a tricky and inhospitable harbor.

sponse in view of the FCC's professed ignorance about Radio Swan's highly publicized operations. I suggested that they try to ignore Navassa in a manner similar to their attitude towards the station on Swan Island.

Ultimately, I received a visit from a dour representative of yet another federal agency. He failed to see the many humorous aspects of the entire matter. Furthermore, he was disinclined to believe that I had done it just to collect data for a humorous story I was going to write about all the commotion my inquiries had caused.

The only way this Ham gear got disembarked onto Navassa was as a labor of love with a dash of bravery tossed in for good measure. Unloading a broadcasting station would require lots of motivation.



The crowning glory came a few months later in a DX club publication. It solemnly reported that it had tapped into "industry rumors" circulating to the effect that someone was planning on opening up a station to be called "Radio Navassa." Despite the potentials for having more fun with this, I got sidetracked into other projects and never wrote the planned "Radio Navassa" story (until now). —Editor



"Hi Neill! E = MC². Howzat grab ya, guy?" The "real" Alice in a rare unretouched photo.

My Alice Blue Groan

Hey, I'm wise to you practical jokers at POP'COMM. You don't fool me for a minute with this "Alice Brannigan" stuff. All those great radio history articles, cyphers, etc. How much do you pay that knock-out model from New York to pose for those phony pictures? Those great, thoroughly-researched articles about radio aren't written by a beautiful YL who lives on a farm near Boston. They just had to be written by that guy we all knew in high school with the quarter-inch thick eyeglasses who talked with a nervous giggle and always had the right answers in physics class. Admit it, I caught you!

I used to be different, but after two years of looking at your photos, I can't stop myself from writing letters like this.

Neil V. Wake, KV7O
Phoenix, AZ

Allright, we'll have to admit that Alice does allow us to retouch her photos just a wee bit. A few pounds shaved off here, some curves added there, a couple of insignificant warts and wrinkles removed, the one wide eyebrow separated into two, the crossed eyes repaired only a little, maybe 4 or 5 minor teeth painted back in, the hair fixed up a tad. While she grudgingly permits

(Continued on page 69)



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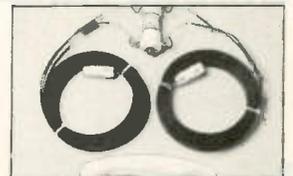
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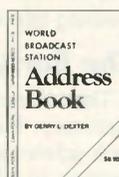
"Radio Receiver-Chance or Choice." Tests of 75 top receivers by radio engineer R. Lichte for easy, accurate comparison. 256p. \$18.50



"World Broadcast Station Address Book." New 5th ed.; 1150 station addresses, how to get QSLs, costs, starter list; 128p. \$8.95

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"Tropical Bands Survey." Latest ed. from Danish SW Clubs Intl. lists brst. stations, 2000-5900 kHz, with scheds, locations etc. \$4.50



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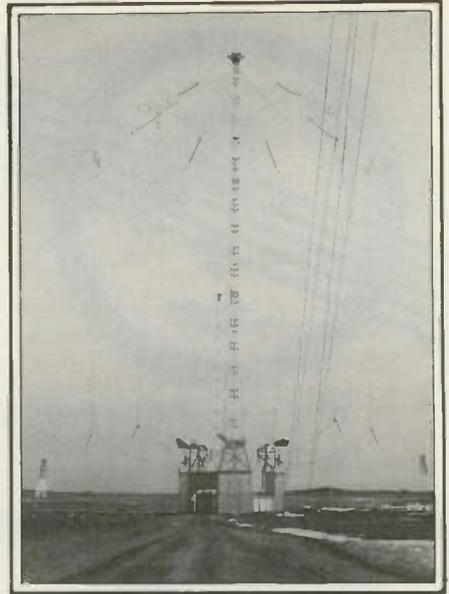
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The antenna system of NAA covers many acres of land. (Photo courtesy U.S. Navy)



One of the antenna towers at U.S. Naval Radio Station NAA in Cutler, Maine. (Photo courtesy U.S. Navy)

Eavesdropping On Radio's Rock Bottom

Monitoring Communications Services Between 1 kHz And 100 kHz Is Esoteric, Exciting, And A Ball Game With Its Own Unique Rules!

BY WALTER B. LOGAN III, KFL4LF

It's an eerie land of communications stations running as much as 2-million watts of power and feeding their signals into antenna systems using 13-million feet of wire spread out over 3,000 acre sites! A far cry from the familiar world of your local "Top 40" broadcaster and even more distant from the frequencies used by The Voice of America and other well-known international broadcasters.

It's where signals may reach any point on the earth throughout a 24-hour period without regard to the seasons or the finicky ionosphere. This is the world of radio's basement, frequencies between 5 kHz and 100 kHz. Some call them Very Low Frequencies (VLF), or just "long wave" frequencies.

For many years these frequencies had minimal use and were primarily regarded as an experimenters' curiosity. Today they

have come into their own and are another of our "new frontiers" with numerous military and scientific potentials—and plenty of increasing interest by hobbyists.

The Early Days

These frequencies are by no means a new discovery. Marconi knew about them and took advantage of them at the turn of the century. In 1913, the fact that they provided good long range coverage caused the U.S. Navy to erect a powerful long wave station, NAA, in Arlington, Virginia. Low frequencies were quite popular until the advance of communications technology managed to open the doors to higher and higher frequencies. By the 1920's the "world below 200 meters" (that is, above 1500 kHz) had become the territory to explore. Hams and

other experimenters, as well as maritime and commercial press services, worked feverishly to continue to perfect equipment and techniques for higher frequencies—25 MHz, 50 MHz, 100 MHz, and more.

In the rush to shorter wavelengths, which offered more compact antennas and the ability to circle the globe with only a few watts of power, the lower frequencies were left behind in a cloud of dust. Some limited "old fashioned" long wave communications systems remained in operation right through WWII and later, but it wasn't until almost 15 years after WWII that the unique qualities of long waves were looked at with renewed interest. It was realized that they could permit communications to be sent to our fleet of nuclear submarines while they remained under the surface.



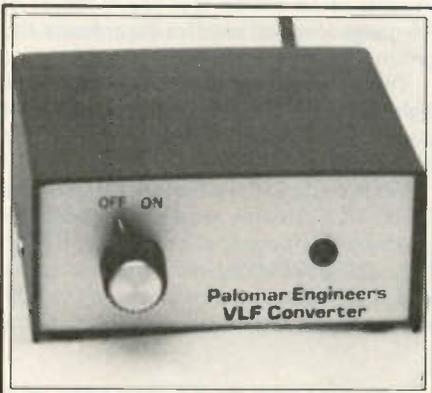
Signals from radio's rock bottom are very useful for communicating with our submarine fleet around the world, even when they are deeply submerged. (Photo courtesy U.S. Navy)



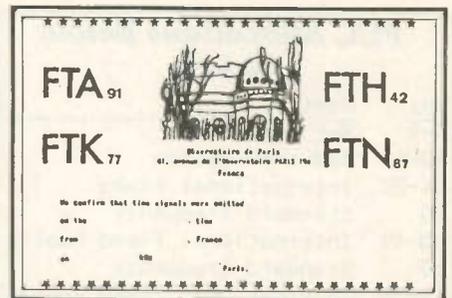
The USAF AABNCP can fly for up to 72 hours during a national emergency. It has VLF communications facilities.



This VLF converter from MFJ Enterprises does a fine job.



Palomar Engineers offers this efficient compact converter.



The Paris Observatory in St. Assise, France, sends out this QSL for station FTA91 on 91.5 kHz. Here's a QSL to try for.



This indoor loop antenna and amplifier can save you the trouble of stringing a long wire antenna.

And, after all, maybe they had some other uses, too!

What VLF Has To Offer

Okay, so there has to be a trade-off. Sure, the antennas are monsters and the transmitter power is gargantuan, but look what it has to offer. While shorter waves bounce and skip here and there as they reflect off the different layers of the ionosphere and are subject to the ever-changing whims of these layers, VLF waves are guided around the earth evenly like Sherwin-Williams paint, with the ionosphere acting like a wave-guide or duct, all day and night, all year long!

Also, unlike shorter waves that are attenuated (absorbed) into both the ionosphere and earth as they propagate, VLF signals lose very little potency as they travel. It seems that this effective ducting is closely related to the fact that the VLF waves (at 6.2 to 62 miles in length) seem to fit well within the space between the earth and the ionosphere (40 to 60 miles).

Combine these advantages with the fact that VLF waves, unlike shorter waves, can penetrate through the oceans to some degree and you've got something worth reviving. Fact is, the whole concept proved so intriguing that the push has been toward using lower and lower frequencies, commonly known as ELF.

THE LOWDOWN

A PUBLICATION OF THE LONGWAVE CLUB OF AMERICA

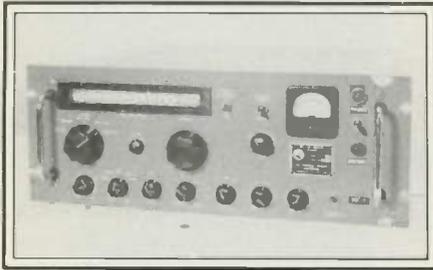
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9	A SEQUENCED BEACON CONTROLLER FOR 1750 METERS John Seamons
14	ON THE AIR Mitchell Lee
16	MAILBAG

Low frequency DX'ers have their own club, the LWCA. The LWCA's monthly newsletter is THE LOWDOWN. It contains material by DXperts Ken Stryker, Ken Cornell, Mike Mideke, W.R. McIntosh, and others.

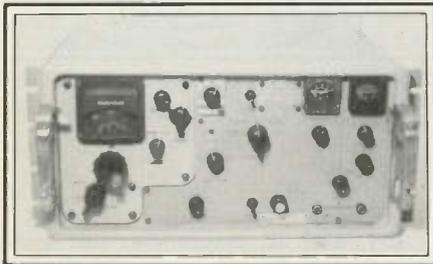
FCC Allocations Below 100 kHz

kHz	Use(s)
0-9	Not allocated
10-14	Radionavigation
14-20	International Fixed
20	Standard Frequency
20-59	International Fixed Public
60	Standard Frequency
61-70	International Fixed Public
70-90	International Fixed Public Radionavigation
90-110	Radionavigation

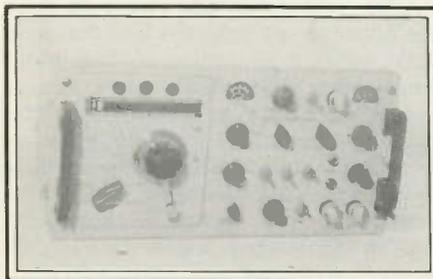
Here's how the FCC's regulations divide up this portion of the spectrum.



The TMC Model VLRB1 VLF receiver. (Photo courtesy Fair Radio Sales)



The SRR11/FRR21 VLF receiver. (Photo courtesy Fair Radio Sales)



The R1134/WRR3 VLF receiver. (Photo courtesy Fair Radio Sales)

Experiments have indicated that frequencies such as 75 Hz, if sent from an optimum location from an especially large antenna, will somehow resonate the earth itself or its magnetic field, thus offering more effective methods of reaching deeply submerged vessels anywhere on the planet. Our government has spent several years proposing that an ELF system operating between 45 Hz (4100 mile wavelength!) and 75 Hz be built for this purpose under various code names, including the ELF, Seafarer, and Sanguine projects. Although environmentalists are



A very sophisticated, modern receiver covering these frequencies is the Watkins-Johnson Company's WJ-8718A. It covers 5 kHz to 30 MHz in all modes.



The Harris Corporation's RF590 is a receiver tuning 10 kHz to 30 MHz, all modes.

claiming that the ELF signals will damage the ecology, the program has been slowly moving toward reality. When last heard from, it was hoping to be set for full operation in early 1986 with antennas at Clam Lake, Wisconsin. More than 1/2-million watts of power will be fed into two antennas stretching for 14 miles each!

England also has an ELF transmitter going into operation from a location in Scotland. The British environmentalists are offering static to this program, which is called Project ELF.

Some Users Of VLF

The Strategic Air Command (SAC): From its bases in Hawes, California and Silver Creek, California, the SAC has been monitored on 29.5 and 37.2 kHz with encrypted FSK RTTY, MSK RTTY, 50 baud reverse FSK RTTY, and extremely slow (5 baud) reverse FSK RTTY.

Omega Navigation System: Eight stations offer global coverage. This system sounds like CW pulses with some of the various stations' pulses coordinated on common channels shared by all. Individual stations also transmit on their own individual frequencies.

Alpha Navigation System: The USSR has established a navigation system similar

to Omega in design and sound. Station locations are Novosibirsk, Krasnodar, and Komosomol'sk na Amure.

U.S. Navy: The USN is a heavy user of VLF and, in fact, has been a long-term advocate of VLF right along. Their stations at Cutler, Maine (NAA) and Jim Creek, Washington (NLK—nicknamed "Big Jim") are quite easy to hear inasmuch as they rate their power by the millions of watts!*

NAA has a dual-array antenna system, each utilizing 13 tall towers set in a 6-pointed star configuration. The towers are from 800 to almost 1000 feet in height. The wiring consists of 13-million feet (2500 miles!) of #6-gauge (copper) used for the antenna and ground systems.

This antenna system is truly an awesome sight and can be seen from several miles away. NAA in Cutler, Maine was built in about 1961.**

While some CW is still noted in use on the USN's VLF stations, most of the communications traffic these days is encrypted RTTY. It should be noted that in the VLF band, CW and RTTY can't be sent at extremely high speeds as on higher frequencies and, the

*Scanner owners located near NLK should monitor 140.85, 149.00, 149.01 MHz.

**Scanner owners located near NAA should monitor 138.96, 140.04 MHz.

Monitored Between 10 kHz And 100 kHz

kHz	Call	Location	20.7	3SB	PRC?
10.2		Omega (ALL Stations)	21.1	3SB	PRC?
11.05		Omega (ALL Stations)	21.4	NAM	Norfolk VA
11.3		Omega (ALL Stations)		NPM	Lualualue HI
11.8		Haiku HI (Omega)		3SB	PRC?
11.905		USSR (Alpha)	22.3	NWC	Holt, Australia
12.0		Monrovia, Liberia (Omega)	23.0		see 20.5 kHz
12.1		Aldra, Norway (Omega)	23.4	NPM	Lualualue HI
12.649		USSR (Alpha)	24.0	NAA	Cutler ME
13.0		Australia (Omega)	24.4	UNW3	Estonian SSR
12.3		Reunion Isl. (Omega)	24.8	NLK	Jim Creek WA
12.8		Tsusshima, Japan (Omega)	25.0		see 20.5 kHz
12.9		Gulfo Nuevo, Argentina (Omega)	25.1		see 20.5 kHz
13.1		LaMoure SD (Omega)	25.5		see 20.5 kHz
13.6		Omega (ALL Stations)	26.1		TACAMO aircraft
14.881		Krasnodar USSR (Alpha)	26.2	3HZ	PRC?
15.1	HWU	LeBlanc, France	27.5	3SA	PRC?
	UMS	Moscow, USSR	27.9	3SV	PRC?
15.625		USSR (Alpha)	28.5	NAU	Aguada PR
16.0	GBR	Rugby, Great Britain	28.7	3HZ	PRC?
16.1	UMS	Moscow, USSR	29.5		Silver Creek NE
16.3	JXZ	Oslo, Norway	29.7	UMS	Moscow USSR
16.5	DHJ58	Flensburg, FRG	30.0	ZRJ	Jan Smuts RSA
	BFD	?	30.5	ZRJ	Jan Smuts RSA
16.8	FUB	Paris, France	37.0	CQB	?
	BFD	?	37.2		Hawes CA
17.1	UMS	Moscow, USSR	38.0	OJG	Kemi, Finland
17.4	NDT	Yosami, Japan		OWJ	Tirstrup, Denmark
17.8	NAA	Cutler ME	40.0	JG2AS	Tokyo, Japan
	NPM	Lualualue HI		JJF2	Tokyo, Japan
	NSS	Washington DC		JME	Fukouka Shingu, Japan
18.0	NLK	Jim Creek WA	46.0	YAC	Kandahar, Afghanistan(?)
	NPL	San Diego CA		RNE2	USSR
	UMS	Moscow, USSR	46.25	DCF46	Mainflingen FRG
18.2	NAH	New York NY	47.2	CGB	Drummondville PQ
18.4	NAD	Boston MA	50.0	OMA	Prague, Czech.
	NAH	New York NY		RTZ	Irkutsk USSR
	NAK	Annapolis MD	51.5	NSS	Washington DC
18.5	DH038	Flensburg, FRG	52.5	GYN1	London, Great Britain
18.6	NHB	Kodiak AK	56.0	NHY	Kenitra, Morocco
	NPM	Lualualue HI	60.0	WWVB	Ft. Collins CO
18.8	UMS	Moscow, USSR		MSF	Teddington, Great Britain
19.0	GQD	Anthorn, Great Britain	62.0	GYC	Whitehall, Great Britain
19.6	GBZ	Criggon, Great Britain	65.9	FUE	Brest, France
20.25	3HD	PRC?	66.66	RBU	Moscow USSR
20.5	UNW3	Estonian SSR	68.0	GBY	Whitehall, Great Britain
	UPD8	Murmansk USSR	75.0	HBG	Geneva, Switz.
	UQC3	Khabarovsk USSR	77.15	NAM	Norfolk VA
	USB2	USSR	77.5	HBG	Geneva, Switz.
	UTR3	Gorki USSR		DCF77	Mainflingen FRG
			83.8	FTA83	Lyon, France

These are some of the stations operating below 100 kHz, as discussed in the text.

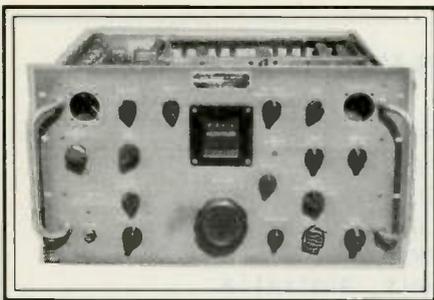
lower one goes in frequencies, the more pronounced is this problem. This has resulted in certain digital techniques being employed to speed up the transmission of RTTY traffic. Voice transmission is never encountered on these frequencies.

The USN's TACAMO ("Take Charge And Move Out") aircraft are operational on VLF in order to provide an emergency back-

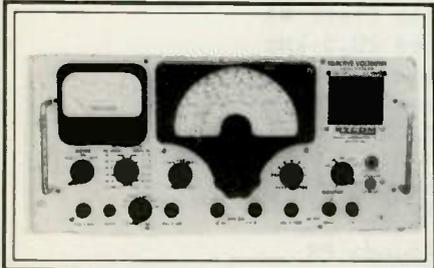
up transmitting facility. These C-130 aircraft, based at Patuxent River NAS in Maryland and also at Guam, run 200 kW into an antenna wire that trails more than six miles from the aircraft. At least one of their frequencies is 26.1 kHz. It should be noted that the SAC's Advanced Airborne National Command Posts (Boeing E4B) operate with 200 kW on frequencies between 17 and 60

kHz. The trailing wire antenna can be extended from one to almost four miles, depending upon the frequency used.

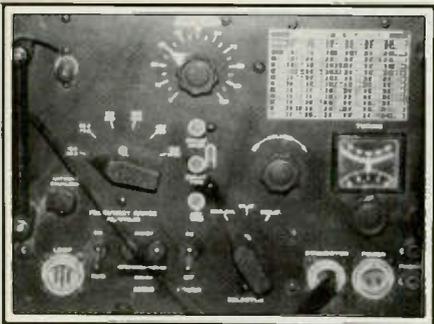
Other VLF stations are, for the most part, used by military forces of various nations (CW/FSK/RTTY) or for sending time and standard frequencies. A chart of selected VLF stations monitored by North American listeners in recent times accompanies this



The formidable R389 VLF receiver with mechanical digital readout. (Photo courtesy Fair Radio Sales)



The Rycom R-2174 VLF receiver. (Photo courtesy Fair Radio Sales)



An ancient but still completely serviceable DZ2 VLF receiver.

report (keep in mind that stations do occasionally change frequencies or enter periods of inactivity).

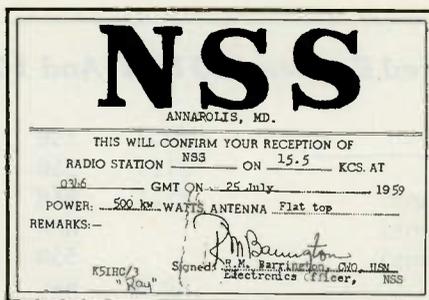
A chart showing FCC frequency assignments below 100 kHz is also provided.

As might be expected, none of this has escaped the view of electronic hobbyists. There had long been scattered interest in hobby monitoring of all frequencies below the standard broadcasting band (540 kHz), but it wasn't until 1960 when Tom Kneitel's article "DX'ing Down Below" appeared in a national magazine that hobby interest was focused upon monitoring VLF in particular. In 1974 a national DX organization was formed by hobbyists interested in VLF and other activities below 540 kHz.

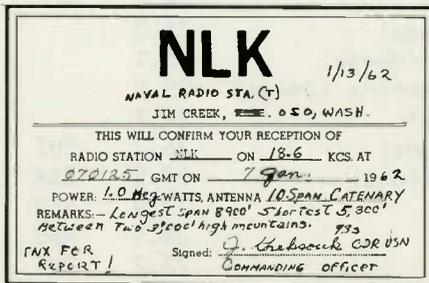
This group, called The Longwave Club of America (45 Wildflower Road, Levittown, PA 19057), offers a membership and a 1-year subscription to their publication, *The Lowdown*, for \$10 (\$18 overseas airmail).

Hardware

After WWII the American military released all manner of receivers covering VLF (usually 15 to 600 kHz or higher) to the surplus market. Some of these had regenera-



A 1959 prepared QSL from NSS on 15.5 kHz claimed 1/2-million watts fed into a flat-top antenna. It was signed by Ray, K5IHC/3. (Courtesy Tom Kneitel)



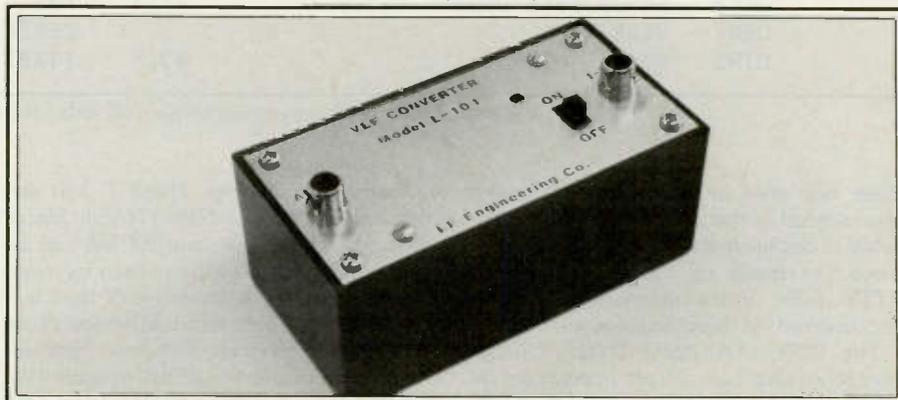
"Big Jim," a/k/a NLK on 18.6 kHz QSL'ed with this prepared return card in 1962. Card states 1 million watts into a 10-span catenary antenna, "longest span 8900', shortest 5300' between two 3000' high mountains." (Courtesy Tom Kneitel)

tive detectors which proved excellent on these frequencies (the reduced selectivity made little difference and they were more sensitive than superhets). Many of these hoary old warriors are still in service and offer plenty of enjoyment to the VLF DX enthusiast. While a few military surplus dealers still occasionally offer them, mostly they are available from other hobbyists via ads in *The Lowdown* and other periodicals.

Some of the WWII USN receivers included the RAK, RAL, RAZ, RBL, CEX-46152/DZ-2, the RCA AR-8510, Hammarlund SP-600VLF, and the Wireless Specialty Co. IP-500. A couple of WWI veterans, namely the SE-143 and SE-1420, will also tune these low frequencies.

More recent vintage military receivers available from surplus electronics dealers have included the R-1134/WRR3, R-2174/URR, SRR-11, and R-1655.

LF Engineering Model L-101, is a very sophisticated device. This company produces a diversified line of VLF equipment.



Commercially-made equipment of the present and recent past can also be effectively used. These include the Drake R7 and R7A, Racal RA-17, Technical Material Corporation's VLRB-1 and VLRC-1 models, Harris RF-505A, Watkins-Johnson WJ-8718 (AN/URR-74), WJ-8940B and S-301.

If you already have a communications receiver and a long wire antenna (the longer the better), you might to consider utilizing a commercially made converter since they are much less expensive than purchasing an entire VLF receiver. No tools or tech savvy is required to hook up a converter!

MFJ Enterprises Inc. (Box 494, Mississippi State, MS 39762) has two very nice VLF converters. One converts the 15 to 500 kHz band so that it can be monitored in the 80 meter ham band; the other unit converts it to the 10 meter ham band. Palomar Engineers (1924 West Mission Road, Escondido, CA 92025) has a 10 to 500 kHz VLF converter that has its output from 3500 to 4000 kHz, and another unit that converts VLF to 4000 to 4500 kHz.

Another unit we like is the L-101B, which puts the VLF band on 3500 to 4000 kHz (Model L-101B/80) or 4000 to 4500 kHz (Model L-101B/70). These units are designed and built by Sal DeFrancesco (K1RGO) of LF Engineering Co., 17 Jeffrey Road, East Haven, CT 06512.

If you've never monitored the communications in radio's rock bottom, then you're in for a totally new listening experience.

Additional Reading

The Lowdown, various issues, published by the LWCA 1974-present.

DX'ing Down Below, by Tom Kneitel, *Popular Electronics*, July, 1960.

The Incredible Basement of Radio, by Tom Kneitel, *Electronics Illustrated*, November, 1961.

The Longest Electromagnetic Waves, by James R. Heitzler, *Scientific American*, March, 1962.

How We're Using Rock-Bottom Radio, by W. Steve Bacon and Ed Nanas, *Popular Electronics*, December, 1963.

Making Giant Waves For Subs In The Deep, by Kevin McKean, *Discover Magazine*, January, 1982. PC

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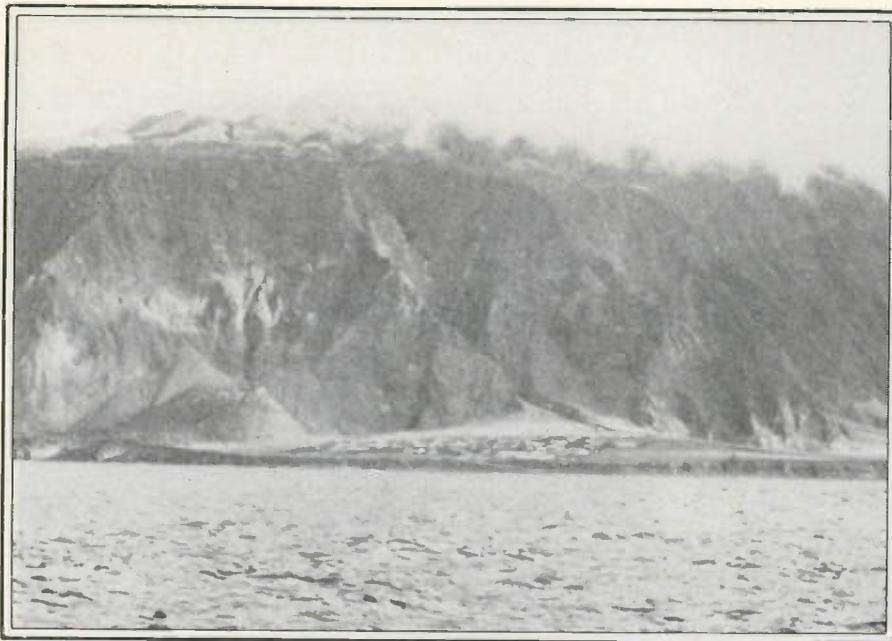
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The settlement on Tristan Edinburgh of the Seven Seas.

men, and other vessels putting in for fresh produce and water. The islanders traded these for such staples as flour, sugar, clothing, tea, and tobacco. Everything was bartered; there was no money in circulation. The Duke of Edinburgh paid a call at Tristan in 1867 and the settlement was therefore named in his honor. The island had a combination missionary and teacher for six years and went a few years with neither when he left. In 1881 the Reverend E.H. Dodgson became the island's minister. He was the brother of Charles Dodgson, known as Lewis Carroll, author of *Alice in Wonderland*.

By 1885, however, the island's fortunes had begun to slide. That was the year fifteen of the islanders lost their lives as they were going out to meet a ship or returning after having done so. Steam has arrived around that time as well, so there were fewer and fewer stops by ships in need of supplies.

Tristan played a small part in World War II. In 1942, a South African Defense Force unit built a meteorological and wireless station there, which was then manned by the Royal Navy for the war's duration. The transmitter used for this wireless station is, in fact, the same one in use today for the Tristan broadcasting station!

Despite the harder times, the island's population grew to 264 by the early 1960's. There was more misfortune just ahead. Tristan is a volcanic peak and, in 1961, that volcano was stirring. So, all of the islanders were evacuated, first to South Africa and then to England, not to return home again until 1963. The population today is around 325, including about 25 expatriots who serve in technical and administrative posts during their three year stints.

So much for history. What's it like to live there? Life on Tristan appears to be better than one might think. The climate is temperate, ranging from 40 to 75 degrees. Average annual rainfall is 66 inches. The

only real drawbacks are the strong and frequent winds that roar in off the Atlantic.

If you lived on Tristan you would live in Edinburgh, "the settlement," which rests on a small plateau right at sea level on the northwest side of the island. Behind you are cliffs that rise 1,000 to 2,000 feet. The cone of the volcano rises to 6,700 feet above sea level and is often hidden in clouds. There's snow up there, too.

Jobs are no problem, for the men anyway. For the males there is full employment. Most work in the crayfish industry operated by the South Atlantic Islands Development Corporation. There is a modern plant there for canning and freezing crayfish, most of which are marketed to the United States. The corporation pays an annual royalty to the island's government, based on a percentage of its profits. The 1961 volcanic activity inundated the first factory with lava, so the current operation is a larger, more modern one constructed on a different site. The company's electric power generator provides electricity to the entire island.

Postage stamps are the most important money-making venture and are sold to collectors around the world. The island is well enough off now to have funds in reserve equivalent to two year's budget, so London has now stopped most of its direct aid. The British government still pays the salaries of the expatriots on the island and bears the cost of overseas training for those students who go that far. In the past London has built seven miles of surfaced roads, developed the harbor, and provided agricultural aid and development.

Tristan is governed by an Administrator appointed by London. Citizens elect an Island Council of eight members, one of which must be a woman. Another three members are appointed by the Administrator, with London's approval. The Council is empowered to pass laws and levy taxes, al-

though there is virtually no taxation other than a token sum which each man between the ages of 18 and 65 must pay annually.

Elections are held every three years (there is or was one in 1985) and the candidate who receives the most votes becomes council leader and "Chief Islander." Candidates have to be over 21 but anyone over 18 can vote. The Council has a number of subcommittees which oversee education, public works, natural resources, agriculture, social welfare, and public health. Social security was implemented in 1977 with employee and employer each paying half.

The British provided funds to build a school and youngsters ages five through 15 have to attend. Education beyond that level is encouraged. Both the Tristan and British governments want to get Tristan youths qualified for overseas training so that more and more posts now held by expatriots can be filled by local people. The British have also added a hospital. There are occasional visits by a dentist. The main health problem among islanders is said to be asthma. Both health care and education are free.

The government operates a store which sells food, clothing, cosmetics, building materials, and a number of other things—even a drink if you feel like one.

Most of the islanders grow crops, raising potatoes, cabbage, lettuce, pumpkins, and tomatoes in areas that are sheltered from the winds. Many keep livestock as well and Tristan is self-sufficient in milk, beef, and mutton. Wool from sheep is turned into clothing.

Many of the islanders maintain shacks on Nightengale Island, which they visit periodically to collect guano for fertilizer, penguin eggs, and cooking oil (from the rendered carcasses of sea birds).

Tristan's wildlife, including the Tristan thrush, island cock, the wandering albatross, fur and elephant seals are protected by a conservation ordinance.

Social activities center on Prince Philip Hall where one can go to see a movie once a week, attend a dance, play badminton, whist, or bingo. The hall features a small bar where "snooker" is popular. In the summer months islanders enjoy swimming, cricket, football, rounders, and fishing. It's not the end of civilization for the linkster either—there's a nine hole golf course. There's a youth club that meets twice a week at the school and a government-operated library complete with the most recent English newspapers.

Most islanders attend the Anglican Church of St. Mary the Virgin, built in 1923. A Bishop visits the island periodically. Communications, other than the electronic kind, are slow and the islanders have to rely on the periodic comings and goings of fishing vessels which don't adhere to set schedules. It can be four or five months between mail deliveries.

The broadcasting station, Radio Tristan (call letters ZOE) went on the air in 1968 to provide the islanders with news and entertainment. Originally it was all volunteer work

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Edinburgh again, with part of the volcano in the front.



and, with the exception of the "full time disc jockey" appointed in 1975, it still is.

The station began its operations from a small portable building, which was moved at least once. But in 1977 the radio found a permanent home in the new building constructed to house the communications station and meteorological post.

The equipment is not extensive. There are two turntables (Garrad GT-35Ps), a Sony TC-185D stereo cassette unit, a Yaesu FRG-7 receiver which is fed into a Millbank Electronics MCC MK 111 stereo mixer. From there the program is fed into that teeny, tiny 40 watt transmitter and out over a simple longwire antenna.

A.L. "Pat" Patterson, who ended his tour as Superintendent of Posts and Telegraphs in April, says he doesn't know why the frequency of 3.290 MHz was chosen for Radio Tristan. He says an even lower frequency would be "more suitable" for the station's needs. All of the station's listeners live in Edinburgh and all are within a quarter mile

of the transmitter, so there's probably no truth to the occasional rumor of Radio Tristan employing one kilowatt some time in the future. There's really no need.

Radio Tristan is on the air from 1900 to 2200 GMT on Sundays, Wednesdays, and Fridays only. Programs consist of BBC news, BBC transcriptions, and programs from Radio RSA South Africa. It is a block program format with 30 minutes devoted to children's programs, 30 minutes of comedy, a half hour of drama or serials. The 15 minute world and local newcast is followed by light and popular music.

Station volunteers also publish the island's small newspaper on a bi-monthly basis.

With each incoming mail delivery, Radio Tristan finds a large batch of reception reports. They are carefully checked and almost invariably unverifiable. Most of the reports cover reception during the 2000-2015 time period when the BBC news is aired. Since this information is freely avail-

ZD9GE

Confirm QSO with
Radio: *WDX91PT*
Date: *5/24/75*
Time: *1518* GMT
Freq: *14.117*
Mode: *AMT SSB CW*
6LU Rpt: *R.S.S.T.*
Tx: *Racal 1 KW*
Rx: *Siemens FS30*
Ant: *Tx Remote*
R: *Dipole*



Victor W. Hugo
P.O. Box 92
Pennington 4184
South Coast
Natal
Republic of
South Africa

Remarks: Mini trans
for QSO in QSL
73 from "VIC"

ZD9GE operated from Gough Island in the Tristan group. (QSL courtesy of Mike Witowski)

able in the *World Radio TV Handbook*, the station insists upon having reports that contain local news items before a report will be confirmed.

Actually there have been a small handful of DX'ers whom the gods have blessed with Radio Tristan QSLs. According to Adrian Peterson of Adventist World Radio's DX Program, a South African group logged the station during a 1971 DXpedition to the South African coast directly opposite Tristan. In 1973 DX'er Eddie de Lange verified Tristan for a reception in Pretoria and so did British DX'er Anthony Pearce in England. More recently Florida DX'er David Sharp got a QSL for a report he sent in 1983. But unless you are very advantageously located or experience miracle con-

ditions, logging Radio Tristan is a case of "dreaming the impossible dream."

But if you simply want to hear any kind of radio emission from Tristan you are in better shape.

Tristan Radio, the commercial communications station which also uses call letters ZOE, operates a daily CW schedule with ZSC in Capetown. This is used primarily for business matters, exchanging information with Tristan representatives in South Africa as well as Great Britain. The communications facility also has a single sideband radiotelephone transmitter which is on the air periodically to make calls to ships or take them from ships as the need arises. Both transmitters are Redifon one kilowatt units. The station also has an Eddystone 1837/2 and Redifon R-408 communications receivers. The antenna is a sloping "V" aimed at Capetown. Operators at the station are Allan Swain and Andrea Pepetto (along with Pat Patterson before he left the island).

Patterson was replaced by Allan Swain as Superintendent—a position that includes responsibility for the broadcast and communications stations, the post office, the phalaetic bureau, and the maintenance of all radio and TV sets on the island.

If you don't luck out with the communications station, you can tune the ham bands and perhaps catch one of the island's seven amateur operators on the air. In 1981 American hams donated a Kenwood TS-1308 transceiver and Patterson began holding amateur radio classes, giving exams

and awarding licenses. Patterson, before he left, operated as ZD9BZ. There is also Andrea, ZD9BV (presumably the same Andrea who works at the communications station); Carol, ZD9CS; Gill, ZD9CA; and John, ZD9CC, who is headmaster at the school. You can also listen for Gwynneth, ZD9CB (John's wife) and Marie-Jose, ZD9CD, who is Mrs. Colin Redston, wife of the island's administrator. The ham operators are moderately active on both 15 and 20 meters.

So that's Tristan da Cunha. And if hearing the regular broadcast station on this tiny spot in the South Atlantic is out of the question, at least there are reasonable possibilities for logging the communications station or one of the ham operators there.

Two out of three ain't bad. PC

Radio On Tristan da Cunha

Radio Tristan, ZOE (broadcasting)
3.290 1900-2200 GMT Sundays,
Wednesdays, Fridays.

Tristan Radio, ZOE (communications)
Periodic SSB radiotelephone use on
one of the following frequencies:
4.017, 6.780, 9.927.5, 14.387.5,
16.432, 17.395.

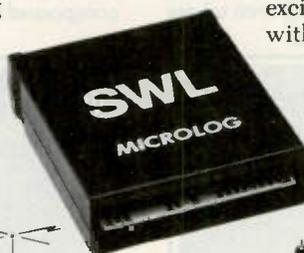
Tristan amateur operators:
ZD9BV, ZD9CS, ZD9CA, ZD9CC,
ZD9CB, ZD9CD
Latest info has ZD9CC regularly Sun-
days at 1200 on 14.190
ZD9CA occasionally at 1800 at
21.336.

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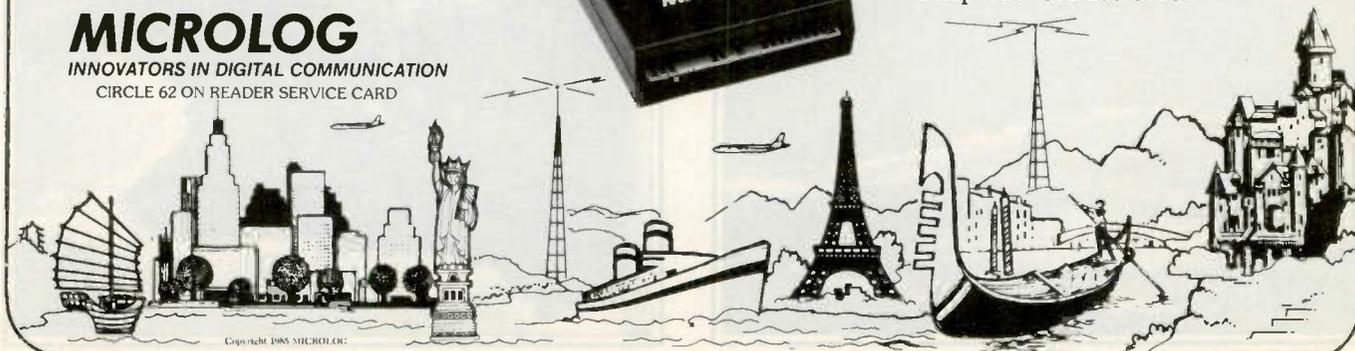
The "SWL" contains the program in ROM as well as radio interface circuit to copy

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Inside The CIA's Secret Radio Paradise: Part II



We Visit Remote Swan Island To See If The 50 kW CIA Clandestine Broadcaster Is Really There! (It Is!)

BY TOM KNEITEL, K2AES, EDITOR

Author's note: In the first part of this two-part series, we looked into the amazing history of this notorious 1960's anti-Castro broadcaster, checked out its ever-changing ownership by several CIA "spook" corporations, and discussed the years-long controversy in DX'ing circles as to whether the station was actually located where it claimed to be, on tiny, lizard-ridden, uninhabited Swan Island 97 miles off the coast of Honduras. Swan was host to American FAA and Weather Bureau facilities, and presumably to Radio Swan (which changed its name to Radio Americas after the Bay of Pigs invasion of Cuba in 1961). Since 1960, when the broadcaster went on the air, Swan Island had been off limits to everyone except those having official business there. This included a handful of Americans as well as a few Cayman Islanders who worked for the Americans as laborers. In 1968 I was surprised to find that I was able to get permission to visit this two-mile long (by 1/2-mile wide) tropical island in order to inspect the RA facilities. I was accompanied by Bob Beason, editor of *Electronics Illustrated* magazine. Here's the story of this eerie sojourn to one of the most remote places in the Caribbean area.

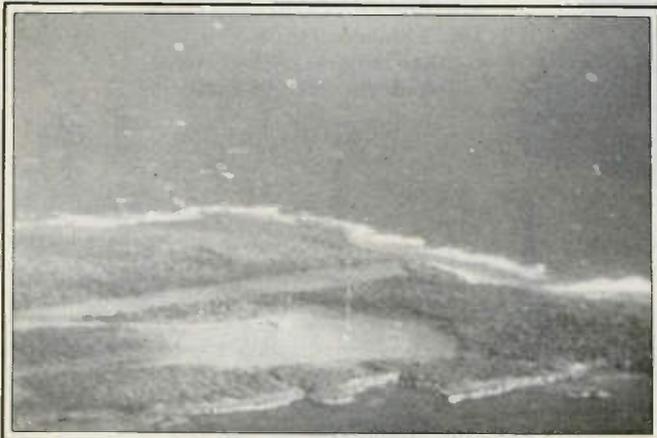
By the time I had received clearance to visit Swan, the controversy regarding the true location of the station was furiously raging. By circuitous logic and totally outrageous technical devices, some DX'ers had been trying to perpetuate the notion that the station was not on Swan Island. Eventually, claims for its supposed true location included Cozumel (Mexico), the Bahamas, south Florida, Navassa Island, Venezuela, even in a ship or aircraft. RA may have inadvertently contributed to this confusion by announcing Swan Island as its transmitter loca-

tion, but giving a Miami mailing address for its broadcast band operations and a Venezuelan address for its shortwave station.

While the RA people gave the green light for Beason and me to visit their Swan installation, they said that we would have to obtain FAA approval and also figure out our own way of getting to the remote Caribbean island (which was not served by commercial airlines or cruise ships).

It occurred to me that it might be interesting, before we left for Swan, to apply to the FCC for a 60-day authorization to operate a

Aerial view of the southeastern area of Swan, showing area where the Radio Americas towers were located.



Aerial view of Swan showing the western end of the island. The RA compound is at the top of the photo. Federal compound is towards the bottom.





Aerial closeup of the federal compound.



After a tense landing, we posed with the crew in front of the DC-3. Bob Beason is at the far left, your author at the far right.



Main Street on Swan Island wasn't easy to traverse while the local cows were out for their daily stroll.



The author seated at the announcer's desk in the small studio.

ham station on Swan. I wanted to confirm that, in 1968, the FCC was still exercising the right to license stations on Swan, even though RA had been there since 1960 without any license whatsoever. So I filed with the FCC for a KS4-prefix and I waited, and waited. Nothing happened.

Eventually I called someone in the license-issuing end of the FCC to ask what was going on. For one thing, he said, the license had been delayed because the FCC had to check with "another agency" to see if I was allowed to go to Swan. I asked if it was the FAA that had to give the okay; he was evasive and never gave me a real answer. Also, he said that Swan Island ham licenses were issued so rarely that the license computer wasn't programmed for giving out KS4 callsigns. Apparently the computer had a minor seizure when asked to do so. Finally, my license came through (KS4CH), but it was issued by hand, and valid for four years instead of 60 days!

(Ironically, during the four years I was listed in the *Callbook* as KS4CH, I was bombarded with cards from operators around the world asking me to QSL their "contacts" with KS4CH on every band from 10 through 80 meters and in all known

modes, during the period from 1968 to 1971. Either someone was bootlegging my KS4CH call or else a lot of operators figured they'd just try sending a QSL in the hopes of getting one from a rare country out of courtesy on my part—even if I couldn't find them in my station log! All of these operators received a special "You didn't really work KS4CH" non-QSL card. I did actually have a few 50 MHz contacts, however.)

Getting There

The biggest obstacle to visiting Swan was the transportation. To fly by private plane from Miami or Key West was impractical because we would have to skirt the west end of Cuba, stop for fuel at Cozumel Island, and then go on to Swan. This idea was discarded as being too long and complicated. Going by sea was also too involved and would have meant digging up a bucket-of-bolts island-hopper cargo ship that would have to lie off-shore while we visited the island—and then we'd have to stop at other ports of call until we got to a place with an airport.

Eventually we decided to charter a 1938-vintage DC-3 airliner (they called it a "Dakota") from Cayman Brac Airlines. This

was a Costa Rican airline flying out of the British Colony of Grand Cayman near Cuba. The DC-3 wasn't scheduled for Wednesdays, so we were told it was available for charter. That meant we had to be at the airport on Cayman Island at 7 a.m. on Wednesday for the flight to Swan. In order to do this we flew out of New York on Monday morning to Miami. Monday in Miami was spent chatting with the FAA man who was in charge of Swan Island, and when we left him we spent time with several former RA employees (Cubans and Americans).

When we told them about our chartered DC-3 they became hysterical with laughter, offering to bet us that the clumsy DC-3 would never be able to set down on the rock-strewn grass landing strip that was only long enough for a twin Beech. This information didn't fill us with confidence.

On Tuesday morning we flew out of Miami on British West Indian Airways for the 55-minute hop to Grand Cayman. This was an exquisite and quaintly beautiful island with a coastline dotted with ancient forts, castles, and shipwrecks. Today it has been "discovered" by swarms of tourists and has probably lost some of the charm it had in previous years.

While we were on Cayman, we noticed that the words *Swan Island* had a definite effect upon all to whom they were uttered. While some of the Caymanians had done work-hitches on Swan, most had never been there and knew little about the place, except for the rumors everybody had heard. Virtually every time we mentioned our destination we were given a look of genuine shock, disbelief, and awe. A taxi driver responded to this news with only a long, low whistle. The proprietor of our hotel and his wife asked us point blank if we were with the CIA. We denied it; they smiled and gave us a knowing wink. We were the "talk" of Grand Cayman!

Tuesday night we took directional bearings on RA with portable equipment loaned to us by a manufacturer. Both the shortwave and broadcast band signals were coming from the direction of Swan (200 miles southwest of Grand Cayman).

On The Way, At Last!

When we got to the Cayman airport on Wednesday morning we were met by a fellow who introduced himself as Frank Roulstone, Jr., a lanky American who ran the U.S. Weather Bureau station on Grand Cayman. He told us that he had heard about our trip (as had *everybody* on the island) and he wanted to go along with us to visit his Weather Bureau cronies on Swan. We figured that since our airliner could accommodate 32 passengers, we could squeeze him in without much difficulty. And off we went toward Swan!

The twin-engine antique airliner slowly droned its way over the shark-infested Caribbean. Our Puerto Rican pilot and co-pilot spoke surprisingly little English (for airline pilots), but between their version of English and my version of Spanish we did manage a form of semi-confused communication.

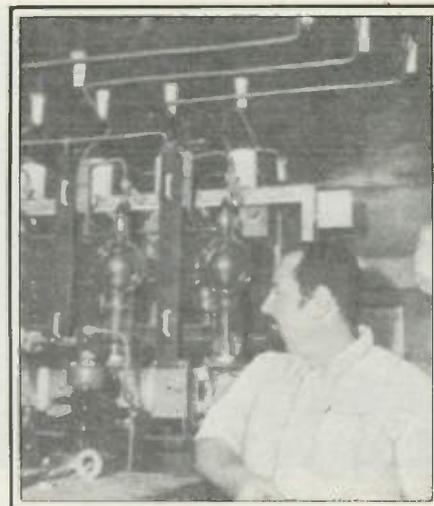
They told me that they had never been to Swan but were homing in on the FAA's non-directional radio beacon, "SWA" on 407 kHz. As we came out of a thick cloud bank we were suddenly impressed when a tiny dot of an island appeared exactly ahead, and then was quickly lost when we went back into clouds.

We came out of the clouds at a lower altitude and Swan looked a lot larger than we had imagined. We made two recon runs around Swan and adjacent Little Swan, a small uninhabited islet the size of a football field lying at the eastern tip of Swan. Swan itself was distinctive in its appearance because of the tall radio towers covering the island. There were several clusters of quonset huts, concrete buildings, wooden houses, and a couple of unpaved narrow roads etched into the white coral.

The landing strip looked absolutely minute, and it was all grass, as promised. The pilots had somehow been under the impression that the runway would be better and longer than it was; they said that we might possibly be able to land but it would be a miracle if they could ever get the plane into the air again from such a short runway.



RA's Paul Collamore (at the right) shows me the gear in the quonset hut used for receiving and taping.



The RA transmitter had six gigantic tubes in the final amplifier stage. The signals head for the antenna via heavy cables overhead.

Frank Roulstone joked that in the plane's 30-year career it must have made at least 7,000 takeoffs, and it would surely be able to manage at least one more. That was a comforting thought!

The pilot then attempted to radio the ground only to unhappily find that there were no VHF air/ground communications facilities on Swan. He told us to cross our fingers as he swung in low from the west on his final approach with a stiff crosswind hitting us from the left. It was the greatest white-knuckle landing ever. The pilot crabbed the plane sharply left, then straightened out at the last instant. We touched down so softly that there wasn't even a slight bump! Even our welcoming committee was cheering!

We taxied around and ended up at the western end of the strip near the Radio Americas compound. While a small aircraft bringing supplies from Miami arrives twice a week, the sight of a DC-3 on the runway was a major event. The entire translated Swan Island "population" (40 persons) turned out. For the moment we were genuine celebrities.

A smiling and shirtless group swarmed over to help us out of the plane. These were FAA, Weather Bureau, and Radio Americas people. The RA station manager, Paul Collamore, gave us a hearty welcome and proudly pointed to the nearby RA facilities. It seemed that if RA wasn't on Swan, then Collamore had done a great job of hoodwinking his Miami superiors.

Big And Brassy

RA was there in all of its glory and making no attempt to conceal itself. The transmitting site was at the island's southeastern end, while the living quarters and recreation area were at the southwestern side.

First stop on our tour was the RA receiving shack and studio. RTTY machines were clattering away printing out reams of Spanish text. Maps of Cuba and Latin America covered the walls. Since most of the programs came on tape or via shortwave feed,

the studio itself was a tiny room with a single desk and microphone. A two-man Cuban staff handled all "live" announcing from the island (these were the only two RA staffers we didn't meet or even see wandering around). We also were not shown the inside of the living quarters on our otherwise comprehensive tour.

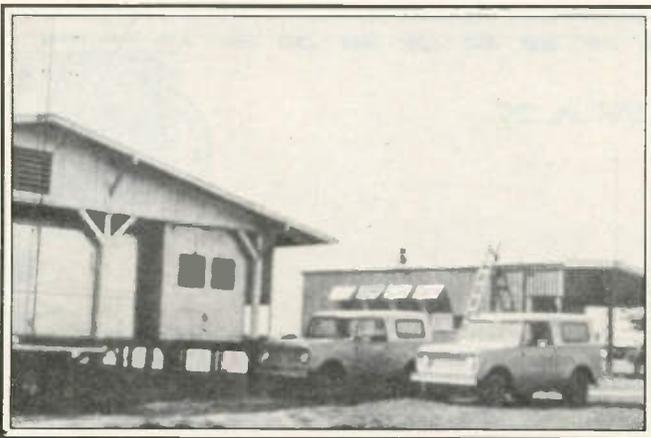
Leaving the receiving shack, we took a rusty International Harvester Scout 4WD vehicle to the eastern end of the island where the transmitter site was located. This trip was often interrupted as the driver had to take time out to convince a number of cows to stand somewhere other than in the center of this jungle version of Main Street.

Since RA wasn't on the air during the day, we arrived at the transmitter while maintenance work was being performed. This site was dominated by two 243-foot towers used for broadcast band operations. These towers were phase fed to produce a null in the signal pattern to the west and northwest to minimize interference to WJJD in Chicago and KSL in Salt Lake City.

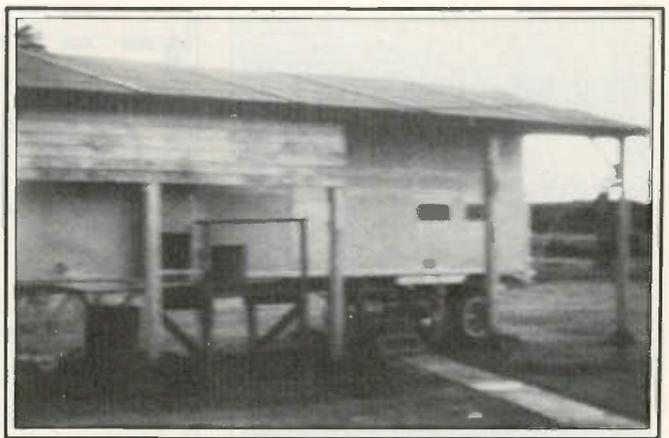
A few hundred yards to the west there were a series of smaller towers used for shortwave transmissions.

The transmitters themselves were mounted in large trailer vans from which the wheels had been removed. A common roof covered all of the vans. Essentially this appeared to be somewhat of a semi-portable station which could be moved into place and put on the air in a far shorter period of time than it would take to build a regular 50 kW broadcaster in your home town. This is probably why hams who visited Swan in February of 1960 did not see the station (even under construction) only two to three months prior to its going on the air.

It should be noted that both the 50 kW broadcast and the shortwave transmitters were quite long in the tooth; both had obviously seen *many* better days at other installations. While we were there, the transmitters were on standby with their tube filaments lit.



RA's transmitters were all in vans parked under a common roof. The generator building is at the rear.



Another view of one of the transmitter vans.

Adjacent to the transmitter vans was a spiffy new structure housing two huge diesel generators used to supply all of RA's electric. Two diesel engineers maintained these units (and the vehicles).

There were six transmitter operators on staff in addition to the diesel engineers. RA also employed 10 Caymanian and Honduran laborers, along with two Cuban announcers. Two of the laborers had their wives and children on the island. They lived in a tiny and temporary ramshackle wooden "village" called Gliddentown.

Paul Collamore confirmed that he and the other Americans running RA on the island were actually employed by Philco's Tech Rep Division (an organization that rents or leases engineers to private industry). As Philco employees, they said that they didn't have answers to many of the questions I had concerning the station's policies, practices, ownership, and history.

Most questions I asked brought the advice to "ask Miami."

For instance, I wanted to know why the shortwave station had a Venezuelan address while the broadcast band station requested that its mail be sent to Miami. And why was the station operating a shortwave transmitter if it was mainly trying to cover the Caribbean area, since its 50 kW broadcast transmitter was doing a bang-up job.

(Miami later advised that the Venezuelan address was used to separate the shortwave reception reports and mail from those coming in from broadcast band coverage. This was pretty dumb reasoning to attempt to peddle. The shortwave transmitter was used, they claimed, to reach areas of Latin America where shortwave receivers were in heavier use than broadcast band receivers.)

I had no doubt that these technical people were truly employees of Philco and not CIA spooks. Such staffing of the station by private sector contract is not at all an uncommon procedure for federal agencies.

Social Set

On a small, remote, and confined place such as Swan, one might expect that employees of RA, the FAA, and the Weather

Bureau would be a rather close-knit group. This was, in fact, quite true. The island's temporary 40 residents shared the various American-run recreational facilities. These facilities consisted primarily of no less than two saloons—the Iggy Clyb and Playboy Club. This was probably a world's record—one gin mill for every 20 residents! Fishing was also a popular recreation, as was swimming. A beautiful all-band (6 to 80 meters) ham station was on tap for those who wished to pursue ragchewing. I was the first person to fire it up on the 6 meter band, I worked several really ecstatic operators!

The FAA/Weather Bureau compound was better looking than the RA digs. This compound consisted of freshly painted white concrete block buildings arranged neatly around a well-kept lawn. The FAA facility was staffed by one man; the Weather Bureau staff was four observers plus several laborers.

The RA compound had no direct communications link to its Miami office, but in an emergency they said that they could use the FAA's RTTY link to Miami. A two-way voice transceiver was in use to communicate with supply ships on 2738 kHz.

I asked one of the RA operators about the broadcast station's lack of an FCC license. This was another "ask Miami" question, although he did volunteer that the RA ham station (KS4CC) was FCC licensed, further commenting that an FCC commercial radio-telephone license was not required to be employed as an RA transmitter operator!

(I later again pressed the FCC in Washington about how this station could continue to operate from an American territory without a license. Three days later they said they had searched their files and couldn't locate any information on a station called Radio Americas. Once upon a time that question, asked via telephone, was answered by a fellow who said, "Government stations don't have to be licensed—no, forget I said that!")

As the day wore on, we took the grand tour of the island. The foliage was so dense that the Scout had to be driven in low range. Some parts of the island were so overgrown that all attempts to cut a road through had failed. Among the exotic sights were the



Just one reminder of Swan's past is an old cement marker that reads, "Boundary of property leased to the United Fruit Co. Dec. 10, 1912."

footings for the old United Fruit Company wireless station towers (four of them) that stood from 1912 to 1932.

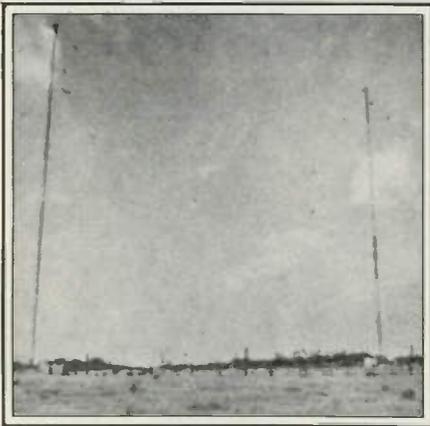
In 1955 a severe hurricane devastated Swan Island, removing virtually all of the vegetation and standing structures (except for one small concrete building). The remains of the towers of the FAA's radio range could still be seen lying twisted and mangled at various spots along the beach.

Homeward Bound

When it came time to leave later in the afternoon, one of the laborers (who said he was Honduran) asked us to take him to Cayman for emergency dental work he needed. He wanted to bring his wife, his brother, two small children, and his dog along with him. A boat trip would have meant a 48-hour sea trip. When we agreed to take him we were surprised to learn that a number of other laborers also discovered "important" reasons to travel to Grand Cayman.



At the federal compound, the FAA's radio range tower looms high above the dense but low foliage.



The antenna system at Radio Americas.

The result was that before we got ready to take off we stood by and watched our plane loaded with an endless parade of boxes, bags, and cartons. Someone even loaded a large wooden crate of (barracuda-like) wahoo fish which, although frozen, didn't smell particularly appetizing. The two pilots were talking to me in high speed Spanish while wildly waving their arms around in the general direction of the cargo and passenger loading operations.

From what I could gather, the gist of their message was that the plane was surely going to plunk straight into the drink as soon as we ran out of runway. The FAA man was laughing and kept telling the pilots not to worry. My suspicion was that the bored Americans on this island would have looked upon a DC-3 rolling into the Caribbean as the biggest event to happen there since the hurricane of 1955!

Eventually the pilots were convinced to attempt to takeoff. Yes, somehow they managed to get at least one more trip out of this old warhorse, as Roulstone had predicted. Of course, when we got back to Grand Cayman, we met head on with a distraught Customs Inspector. When we left for mysterious Swan Island that morning with only three passengers in a chartered airline, he looked at us like we were all crazy. But



Copycat Radio Swan came on the air in the mid-1970's, implying it was related to the original station, but it was a hollow boast.

when we returned to Cayman that same day with extra passengers, a dog, babies, assorted crates of dubious content, and a large carton of frozen fish, no doubt his suspicions were confirmed not only about Swan Island, but about Americans.

But our own curiosity was satisfied. If what we saw wasn't Radio Americas, then somebody went to a lot of trouble to put us on. Of course, our trip did not produce any specific proof of CIA ties, but it also didn't alter any of our earlier held beliefs about RA's ownership, purpose, or financing.

Certainly every person on Swan made our visit as cordial and pleasant as possible. There were no restrictions on taking photos and I took several rolls of Super-8 movies as well as numerous photos.

Why did they let us visit this off-limits island? That remained a mystery for a while. Inasmuch as RA ceased operations on May 15, 1968, only a few months after our visit, that led me to believe that RA's owners figured they had nothing to lose by allowing the visit, especially since I had written so much about the station over the years. One DX-author has suggested that it was my writings that eventually ran RA off the air, however (to me, at least), this seems rather unlikely.

A later Radio Swan came on the air in mid-1975, eventually moving to the old RS/RA shortwave frequency of 6.000 MHz. The station implied that it was the original station in reborn form, but without ties to the CIA. This station operated for about a year from a site in Honduras but was mysteriously blown up in 1976. Although the station was anti-Communist, there was no reason to believe that it had any connection with the "original" Radio Swan or Radio Americas.

And what of the controversy surrounding the "true" location of RS/RA, and whether it was actually on Swan Island? For the most part, our visit (combined with the station's leaving the air) seemed to not only satisfy most everybody's curiosity, but also to taper off interest in the station. Yet one die-hard supporter of the old "not on Swan" school of thought felt backed into a corner. When last



The FCC had clearly demonstrated its authority over Swan by assigning licenses and callsigns on the island, except when it came to the 50 kW broadcasting station. This KS4AC card was from 1947.

heard from he was still insisting that the station was not on Swan and that our trip had proven nothing inasmuch as we were not there when the transmitter was in actual operation. His position was that the CIA had put all of the equipment on Swan for the purpose of our visit and it had all been a show just to mislead us. **PC**

Additional Reading

Radio Swan, The Thorn In Castro's Side, by Tom Kneitel, *Popular Electronics*, March, 1961.

Radio Swan, A Method or A Madness?, by Tom Kneitel, *DX'ing Horizons* magazine, June, 1961.

Radio Americas And The CIA, by Tom Kneitel, *Electronics Illustrated* magazine, September, 1967.

El Visits Radio Americas, by Tom Kneitel, *Electronics Illustrated* magazine, July, 1968.

The Secret Government, by David Wise and Thomas B. Ross, Random House, 1964.

Shortwave Clandestine Confidential, by Gerry L. Dexter, Universal Electronics, Inc., 1984.

Journey To Swan Island, by Vic Clark (W4KFC), *CQ* magazine, May, 1960.

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Tokyo Rose: A Traitor Who Never Was

Remembering Her On The 44th Anniversary Of Our Entry Into The War

BY DON JENSEN

But there is no Tokyo Rose," the Japanese informant told the two American war correspondents. "Nobody used that name!"

The pair—Clark Lee of the International News Service and Harry Brundidge of *Cosmopolitan* magazine—were bitterly disappointed.

It was late August 1945. Hiroshima and Nagasaki were in nuclear ruins. Japan had surrendered. World War II was over at last.

The two writers had hitched a ride on an Army Air Corps plane to Atsugi Air Base near Tokyo. Their mission was to track down and interview the legendary seductress of Japanese radio, the sexy-voiced woman whose scratchy records and taunting words had been heard in foxhole and fleet across the Pacific, the announcer the GIs called Tokyo Rose.

But there was no one-and-only original Tokyo Rose. Or maybe there were eight of them, women who broadcast English language propaganda from Radio Tokyo. Other accounts put the number of nominees for the title at 13.

The origin of the name remains obscure today. It probably was the invention of an unknown writer or editor back home, trying to personify the enemy radio voices broadcasting to homesick American troops.

But Lee and Brundidge had come to find Tokyo Rose and find her they would, even if they had to create their own dragon lady of shortwave!

Anxious to earn a \$500 finder's fee, the informant led the correspondents to 29-year-old Iva Toguri d'Aquino, one of about 200 Japanese-Americans who, for one reason or another, had worked for Radio Tokyo.

Iva, as American as Yankee Doodle and, in fact, born on the Fourth of July, was no traitor. But she had been a "voice" on the so-called "Zero Hour" broadcasts. And in devastated post-war Japan, she desperately needed the \$2,000 the writers offered for a first-person Tokyo Rose interview.

To her everlasting regret, she told Lee and Brundidge what they wanted to hear, that she was the mythical Tokyo Rose. She



Mrs. D'Aquino at her trial for treason in 1949. (UPI/Bettmann newsphotos)

was convinced that she had done nothing disloyal. So what was the harm in a little while lie? But it would cost Iva her reputation, her marriage, a \$10,000 fine, and six years and two months in a federal prison.

Despite a 1977 presidential pardon and virtual admission by authorities that she was no traitor, the tiny 69-year-old lady, living quietly on Chicago's northside, is unable, even after four decades, to escape her image—a notorious Oriental femme fatale.

Beginnings

Ikuko (though she has always been called Iva) Toguri was born in southern California on July 4, 1916. She is one of four children of a Japanese-born couple, the late Mr. and Mrs. Jun Toguri. She grew up in a quiet Los Angeles neighborhood, a typical American kid in a home where English was the everyday spoken language.

As a teen, Iva had plenty of friends, a love of sports, a crush on film star Jimmy Stewart and a passion for her aged Chrysler sedan.

She graduated from Compton Union High School and went on to UCLA, where she was an honor graduate with a degree in zoology and a dream of becoming a doctor.

Those plans changed in the summer of '41, when it was learned that her aunt was terminally ill in Japan. Iva, 25 and unmarried, was dispatched to Tokyo as the family's representative. In her haste to depart, she had no time to get a passport. She carried only a State Department certificate of identification.

Her Japanese relatives, the Hattori family, were warm and friendly. But Iva was lost in a strange country. She could, at first, speak only a little Japanese. The food was unfamiliar, the customs alien. She felt uncomfortable in the strictly controlled militaristic country, watched, as a foreigner, by the ever present Kempeitai "thought police."

The stay was only supposed to be six months and Iva was anxious to go home. But before she could book return passage, it was December 7.

Suddenly, for Iva, things took a drastic turn for the worse. She was an enemy alien. The Kempeitai brought her in repeatedly for questioning. Officials, who pressed her to renounce her American citizenship (which she flatly refused to do), denied her food ration stamps. People in the street shouted "huryo"—traitor.

However, certain jobs in wartime Japan demanded a knowledge of English, so despite her status, she was hired as a bilingual typist by the Domei News Agency.

There she met a young Portuguese-Japanese, Felipe J. d'Aquino, who was as opposed to the Japanese military regime as she was. When she was forced out of Domei for expressing pro-American sentiments, it was d'Aquino who found her another temporary clerical job at the Danish Embassy, where he worked. In 1945, the couple would marry.

In 1943, though, Iva landed yet another job, a part time post as a typist at Radio Tokyo. There, before long, she met several allied prisoners of war who had been forced, on threat of death, to produce a daily propaganda show called "Zero Hour."

Iva was sympathetic to the plight of the captured officers, Australian Maj. Charles



Iva Toguri D'Aquino, shown in Radio Tokyo, was one of Japan's Tokyo Roses in World War II. She is shown seated before the microphone she used during her broadcasts to GIs in the Pacific. (UPI/Bettmann newsphotos)

Cousens, U.S. Army Capt. Wallace "Ted" Ince, and Philippine Lt. Norman Reyes. She befriended the trio, bringing vitamins and fresh fruit to ward off scurvy.

The officers later testified that since they had no choice but to broadcast, they designed the program as a propaganda burlesque. Their Japanese captors missed the satire and the double meanings, though their GI audiences did not. In fact, in the closing days of the war, the U.S. Navy, tongue-in-cheek, cited the shortwave show for "contributing to the morale" of the men at sea.

"Zero Hour" wasn't the only Radio Tokyo program with coerced POW participation. Less well-known was the English language show with the Japanese name, "Hinomaru (Rising Sun) Hour." In that program, POWs were made to read propaganda statements written by their captors.

Both programs were widely heard and closely followed by civilian shortwave listeners back in the States.

An unidentified "Old Timer" told magazine DX columnist Ken Boord in 1944 that he regularly tuned the Rising Sun segments from Radio Tokyo's 50,000 watt shortwave station, JLT3, on 15,225 kHz for the POW messages. Jotting down the names and hometown addresses given by the prisoners, "Old Timer" called their loved ones long distance, giving them what often was their first word that missing sons or husbands were captured, but alive.

Others did similar monitoring, including the blind New Zealand SWL, Arthur Cushen, who later received the Order of the British Empire for his humanitarian efforts.

Stateside listeners got up early or stayed up late to hear the "Zero Hour," on the air daily at 5 a.m., New York time—0900 to 1000 GMT/UTC.

Longtime California DXer August Balbi

tuned in at 2 a.m., Pacific War Time, to hear "Zero Hour" on either JZJ, 11,800 kHz or JUV3, 11,897 kHz.

In the autumn of 1943, Cousens decided he wanted Iva, the girl with the "gin-foggy" voice, on the show. He thought her "hack-saw" tones with the western inflections were just right for his propaganda parody, about as far from a seductive siren as he could get.

At first Iva was reluctant. Eventually, though, she accepted the job, which paid a meager \$40 a month. Cousens reassured her that she was doing the right thing.

"I told her it was a straight entertainment program. I have written it and I know what I'm doing. All you have to do is to look on yourself as a soldier under my orders . . . You will do nothing against your own people."

When the war ended, though, the allied officers were promoted, not disciplined. It was Iva who was prosecuted and convicted for the broadcasts.

Her on-the-air name was Orphan Ann, coined by Cousens, says Tero Ozasa, then her 21-year-old, Utah-born sound engineer.

"The Ann was short for announcer, as well as being a reference to the comic strip character, Little Orphan Annie," Ozasa says. "The name was meant to convey her situation, an orphaned American announcer in Tokyo."

Ozasa, who never returned to the U.S. after the war, went on to become the assistant to the secretary general of the Asian Broadcasting Union. He was Iva's studio engineer for nearly 80 percent of the "Zero Hour" broadcasts. He remembers them well.

Each night at 6 p.m., Tokyo time, the emcee—Cousens, Ince or Reyes, usually—opened the program with a five-minute preview of its contents, then followed with a 15 minute newscast.

Iva's spot, 15 minutes of music and

banter, came next. Music was always a problem. Current hits were difficult to impossible to get in wartime Japan. Iva's records tended toward old standards, some march music she hoped would "stir up my boys," and some rather pitiful "copies" of pops by Japanese orchestras.

A U.S. bomber squadron, it is said, responded to Orphan Ann's apology for her outdated selections by collecting a wooden crate full of the latest hits. On a Tokyo raid, a flight crew parachuted the box, addressed to Tokyo Rose, into the city. Unfortunately, the shellac platters all smashed when the crate hit the ground.

At 6:35 p.m., a commentary, written and presented by one of the three POW officers, was aired. This was followed by 15 minutes of semi-classical music, hosted by another English-speaking female announcer.

The last five minutes featured a headline wrap-up and, sometimes, a brief humorous sketch.

If there was ever any propaganda, it was in those skits, Ozasa maintains. And Iva never was involved in that part of the show.

"And now, gentlemen, the 'Zero Hour' brings you Orphan Ann and her Languid-eers," began one program segment monitored and recorded on wax cylinders by U.S. military intelligence. "Cheerio once again to all my favorite family of boneheads, the fighting GIs in the blue Pacific.

"This is Orphan Ann at this end of the situation, hanging her shingle out for a few minutes. What for? To do business, of course . . . Lend an ear to the fighting GIs choice for favorite vocalist singing a well-known melody, 'Two Hearts that Pass in the Night.'"

And another:

"This is Radio Tokyo's special program for listeners in Australia and my boneheads in the South Pacific. Right now I'm lulling their senses before I creep up and annihilate them with my nail file . . . but don't tell anybody! Now here's my next waltz which I promised you, Victor Herbert's 'Kiss Me Again.'"

"It was obviously a joke," says Rex Gunn, former Associated Press radio bureau chief and a post-war friend of Iva's.

Shigetsuya Tsuneishi, then a 33-year-old lieutenant colonel in the Imperial Japanese Army and chief of the propaganda broadcasts, now admits that what was intended as demoralizing propaganda turned out to be so popular with American troops that it had the opposite effect.

"It was actually building the enemy's morale, rather than destroying it," Tsuneishi says.

Some WWII veterans say Tokyo Rose taunted her listeners with claims that their Stateside sweethearts were two-timing them back home with 4-Fs and deferred defense workers. Few took it seriously, though.

Memories are tricky things, and are not supported by the surviving scratchy recordings of a handful of "Zero Hour" broadcasts. Perhaps those recollections of a sexy-voiced and slightly raunchy Tokyo announcer may

not have been "Orphan Ann" Iva Toguri at all, but another announcer known as the "Saturday Night Party Girl."

There was, though, one program recording which eventually led to Toguri's conviction as a traitor. It was broadcast in October 1944, during the battle of Leyte Gulf off the Philippines, which ironically, proved to be a huge American victory. It went:

"Orphans of the Pacific. You are really orphans now. How will you get home now that all your ships are sunk?"

V-J Day Brings A New Twist

For two years, "Zero Hour" aired nightly, seven days a week. Then came V-J Day, and it was all over.

Close behind the first occupation forces came correspondents Lee and Brundidge, looking for Tokyo Rose, whose name had been made infamous in the U.S. by a *Time* magazine article the previous year. Their Japanese informant led them, on Sept. 3, 1945, to a room in the Imperial Hotel and an interview with the by-then married Iva Toguri d'Aquino.

Though it was untrue, she signed a statement admitting to being "the one and original Tokyo Rose . . . (with) no feminine assistants or substitutes." They paid her a fee, a fortune in defeated Japan, and steered her, Iva says, through a lengthy interview in which they sometimes both asked and answered their own questions.

Afterward, Lee pounded out a long story

for his news service, beginning with the assertion—unsupported by his interview notes—that Iva was "willing to take her medicine" for her wartime broadcasts.

Brundidge sent a 5,000-word story to *Cosmo*, which the next day fired back a rejection, saying it didn't want an article purchased from a traitor. Burned up, the magazine writer went straight to 8th Army intelligence officers with his notes, which he termed a "confession," and denounced Iva as a traitor.

She was arrested, held in custody for a week and questioned, and then, released. A short time later she was re-arrested on "suspicion of treason." For nearly a year, she was imprisoned at Sugamo, a fortress used to house Japanese war criminals awaiting trial. During that time, Iva was permitted only a monthly 20-minute visit from her husband.

The Federal Bureau of Investigation and the Army conducted separate investigations. On April 17, 1946, the Army's legal section concluded that there was no evidence that she had ever "broadcast greetings to units by name and location, or predicted military movements or attacks, indicating access to secret military information and plans."

"There is evidence," the report continued, "that Toguri's activities, particularly in view of the innocuous nature of her broadcasts, are not sufficient to warrant prosecution for treason."

Six months later, the Justice Department issued a similar finding. On October 26, she received her unconditional release.

The ordeal seem over. Iva and Felipe settled down in Tokyo. Soon they were expecting a child. Insistent that the baby be an American-born citizen, she persuaded "Phil" that for them it should be "the Golden Gate in '48," and then on to Chicago.

Like other Japanese-Americans in the United States, her family had been interned for the duration of the war. In 1942, in an Arizona concentration camp, her mother died. When the war ended, Jun Toguri, his son and other daughters moved to Chicago and opened a store.

As an American citizen cleared of treason by two official inquiries, Iva could not be denied a passport. But when the press reported her planned return, protests mounted. A Toledo American Legion post demanded her arrest and conviction. The reporters, particularly radio commentator Walter Winchell, waxed indignant that the government had failed to punish Tokyo Rose.

In an election year, the political pressure increased, with the Truman administration coming under attack from the Republicans for alleged softness toward spies and traitors. The Justice Department re-evaluated its 1946 decision. Attorney General Tom Clark ordered Iva Toguri d'Aquino prosecuted "vigorously" as a turncoat.

On Aug. 26, 1948, not long after her baby had been stillborn, she was arrested in Tokyo. Under Marine guard, she was brought back to San Francisco for trial.

A grand jury considered the slim evidence. Only six recordings of her broadcasts could be found. But on the assurance that other Americans who took part in the Radio Tokyo broadcasts would be similarly charged, the grand jury issued an eight-count indictment.

Felipe, intent upon testifying at Iva's trial, sailed for Seattle. He was permitted to testify, but only after he signed a document saying he would never return to the U.S. For more than 30 years, he has not. Although the couple exchanged letters for a number of years, they have had no contact with each other since Iva was released from prison in 1956.

"It has been a long time and feelings change," d'Aquino says. "It all seemed so hopeless."

The trial began in July 1949 at San Francisco's federal post office building at 7th and Mission Streets. Iva was represented, without fee, by attorneys Wayne Collins Sr., Theodore Tamba, and George Olshausen.

The prosecutor was Assistant Attorney General Thomas DeWolfe, fresh from a successful case against Douglas Chandler in Boston's federal court. Chandler, a rather pathetic ex-newspaper columnist and pale Yankee imitation of Lord Haw Haw, was convicted of treason for his wartime Berlin broadcasts under the nom d'microphone, "Paul Revere."

The magistrate in Iva's case was Judge

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Michael Roche, who seemed to form his opinion of the case early in the trial.

It was the longest treason trial in U.S. history—56 days. Testimony from 71 witnesses totalled almost a million words, plus 19 written depositions. The case cost the government \$750,000.

A quarter of a century later, an extensive investigation by the *San Francisco Chronicle* concluded that "the proceedings were marred by bribery, government obstruction, unscrupulous journalism, missing evidence (lost tapes and transcripts), mistaken identity, witness intimidation, violation of constitutional safeguards and racism!"

A number of prosecution witnesses have since admitted they falsely pointed the finger at Iva Toguri out of fear that they, themselves, would be prosecuted for treason.

When all the evidence was in, the case went to the jury, which reported to Judge Roche that they were hopelessly deadlocked at 6-6. He sent them back to deliberate further.

In the end, the exhausted jury compromised and found Toguri guilty of just one count—the previously mentioned "Orphans of the Pacific" broadcast.

Jury foreman, John Mann of Oakland recalls that when the defendant received a 10-year sentence and a \$10,000 fine, the panel was shocked at the severity. The jurors "instantly regretted" the compromise verdict.

Mann, 25 years later, told the *Chronicle* that he "should have had a little bit more guts" and held out for acquittal.

All motions for mistrial, arrest of judgment, clemency, and bail pending appeal were denied by Roche. Iva's citizenship was revoked and she was sent to the federal reformatory at Alderson, West Virginia.

The federal government seized two life insurance policies worth \$4,745, as partial payment of the fine.

Appeals, including three to the Supreme Court seeking a review of the conviction, all were denied. Requests for presidential pardon, beginning with the Eisenhower administration, were ignored. But in 1956, with time off for good behavior, she was released from Alderson and returned to Chicago. She went to work in her father's store, J. Toguri Mercantile Co.

The federal government wasn't through yet. A deportation action was begun, but failed when it was learned that she had neither Japanese nor Portuguese—Felipe's nationality—citizenship. She was an American citizen, period!

The feds came after her again in 1971, seeking the \$5,255 balance of her fine. She was able to satisfy the lien three years later, upon her father's death. His will stipulated that the fine be paid from his estate.

Things finally began looking up for Iva in 1974. The 30,000 member Japanese-

American Citizens League took up her case in earnest. A nationwide campaign was launched for a presidential pardon.

The press again was interested, but this time looked at events in a different light. Investigations turned up the sordid aspects of the 1949 trial. Publications, the California state legislature, and U.S. Sen. S.I. Haya-kawa, R. California, lobbied actively for the pardon.

On January 19, 1977, the day before his term ended, President Gerald Ford granted Iva Toguri a pardon and restored her American citizenship.

She continued to run the family store, assisted by nieces and several nephews, veterans of the Vietnam war, expressing surprisingly little bitterness toward the government and her one-time accusers.

"Heck," she says, "you just have to adjust your life."

But every once in a while—as during the Falklands War—when a woman announcer is heard making propaganda broadcasts, it starts all over again.

"Another Tokyo Rose," say the headlines.

"There is an old Japanese saying," Iva has noted. "Rumor dies out after 75 days. But this, this will take 75 years. I can't wait that long!"

"I'll get my reward in heaven . . . Here on earth, I'll just have to live with the rest!" **PC**

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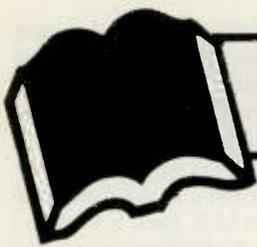
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BOOKS YOU'LL LIKE!

BY R.L. SLATTERY, KAZ7JS

Uninhabited And Deserted Islands



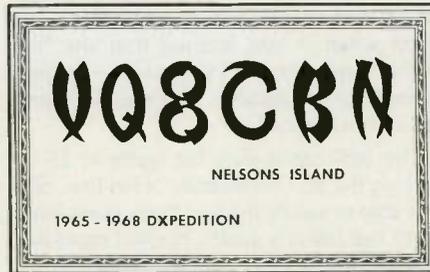
Jon Fisher

The Blue Lagoons

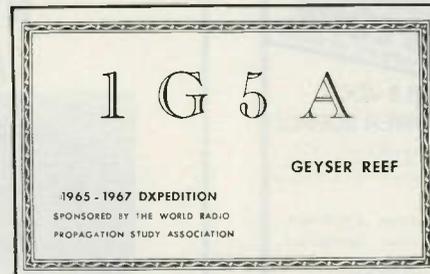
Looking for a spot to open up on unregulated shortwave broadcast station (your very own Radio Swan/Americas!)? Want to go on a spectacular Ham radio DXpedition? Want to start your own country (create your own callsign prefix, issue your own radio licenses to yourself and others—even passports)? Need a hideout, or a very exclusive and secluded vacation or retirement paradise? Or a quiet and remote staging area for a clandestine operation? Or maybe your interest in DX'ing has piqued your curiosity about out-of-the-way places—places of which dreams are made—places described in Jon Fisher's exciting book entitled *Uninhabited and Deserted Islands*.

Fisher tells you all about more than 150 uninhabited, abandoned, and deserted islands in the Pacific, sub-Antarctic, South Atlantic, and Indian Oceans. Many abound with edible fruits and vegetables, wild pigs and other game, birds and eggs, with the waters teeming with nutritious seafood; all you can eat free for the taking. Building material is plentiful on many islands; some were inhabited in the past and already have existing structures (even aircraft landing strips)! While a few have, in the past, been used for celebrated Ham radio DXpeditions, others still await being put on radio maps for the very first time as "new countries" by Hams or broadcasters!

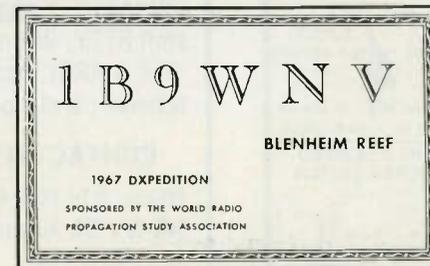
Read about Ata Island (22-S by 176-W) with its 1150 ft. twin peaks. Nobody's lived there in 120 years! Read about Saint Paul Island (39-S by 78-E), with an area of three



Tiny, isolated, and totally deserted Nelson's Island (near 5-S by 72-E) was included in W9WNV's 1960's DXpedition. This is one of the many islands discussed in Jon Fisher's book. Maybe you, too, could issue rare QSL's like this one. It can be done!



In the mid-1960's W9WNV went on a celebrated (and equally controversial) DXpedition to a number of uninhabited islands. Since such places usually don't have regular callsign prefixes assigned by international agreement, he had to create his own (like 1G5A). Maybe you could become 1G5B or broadcaster IGAA!

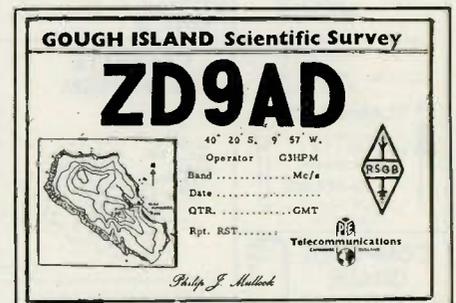


Deserted Blenheim Reef was put on the air by W9WNV with the self-assigned call letters 1B9WNV. Many DX paradises still await someone to put them on radio maps!

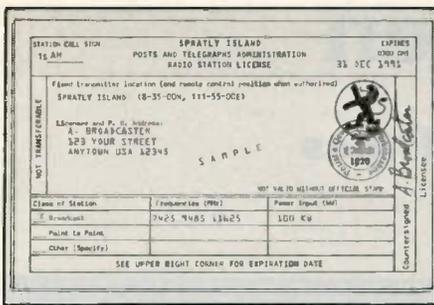
square miles. Although there was a settlement there in the 18th century, and a failed seafood cannery operation in the 1920's, today the place is totally deserted. Saint Paul abounds with hot springs (your own heating and geothermal electric source). Its surrounding waters are home for great numbers of luscious lobsters (two ships from Reunion visit these waters every year to harvest 350 tons of lobster tails). Find out about Peros Banhos Island (5-S by 72-E) with its intact but abandoned plantations, and Masse Island (8-S by 141-W), deserted save for being overrun with sheep, cattle, pigs, as well as herds of wild asses "of enormous size." You could have one helluva barbeque every night of the week on Peros Banhos, and you'd never have to worry about asking the neighbors or the in-laws!

And so it goes; Deception Island, Palmyra Island, Disappointment Island, and many others to stir and challenge your imagination for packing up your receivers, transmitters, toothbrush, and suntan lotions.

Detailed descriptions of the history, status and physical conditions are given. Geographic coordinates reveal the exact locations. More than 40 maps and a complete island index and reference bibliography round out this useful book. A thoroughly fascinating and handy information source for DX enthusiasts, survivalists, folks who don't want to be located, mercenaries, Rambo's, real estate promoters, condo builders, geography freaks, adventurers, dreamers, or just anybody who has ever wondered if



Gough Island, in the middle of the South Atlantic, has a warm climate with abundant rainfall. Lush vegetation reaches almost to the top of its 3,000 foot central peak. Its population consists of birds and seals. A British scientific expedition to Gough, mentioned in Fisher's book, established a temporary Ham station there that became one of the highlights of the 1955 DX season! The native ecology has never been disturbed by humans and it remains a tropical paradise hundreds of miles from "civilization." Huge guano deposits remain unexploited!



Totally abandoned Spratly Island is in the South China Sea. When a DXpedition went there 20 years ago, it had to issue itself its own radio license using an unofficial callsign with a "1S" prefix. A new "Spratly Radio License" is now available to let DX enthusiasts issue themselves their own "license" and "1S" Spratly callsign for DXpeditions, AM/SW broadcasting, CB, experimental, ute, or whatever uses. Spratly is one of the world's rarest DX countries, so you could achieve instant fame next time you go there. In the meantime, boggle the minds of your friends and enemies by giving 'em an eyeball full of your Spratly "license." Looks great, just like a real DX license, complete with "official" validating stamp. Could fool an expert! Even comes with a map showing where Spratly is located. See text for details.

there really are any lost paradises without crime, politics, inflation, war, car payments, taxes, loud music, nosy neighbors, Ayatollahs, time clocks, nukes and Prince. Hey, there really are such places!

Uninhabited and Deserted Islands, Jon Fisher's 112-page book, is available at \$8.95 per copy (plus \$1 postage to addresses in the USA/Canada/APO/FPO) from CRB Research, P.O. Box 56, Com-mack, NY 11725. Be sure to ask for CRB's 1986 catalog; plenty of new items!

When you order *Uninhabited and Deserted Islands*, be sure to get your startling and unique "Spratly Island License." Spratly is an abandoned island that turns out to be one of the world's rarest DX countries. This great looking 4 1/2" by 7" "license" to operate from there is a total mind-boggler when displayed on the wall of your radio room. The Spratly "radio license" and its accompanying map and self-licensing data will be included at no additional cost if you ask for it and mention POP'COMM when you place your order. Don't miss out on this sensational eye-catcher!

Dallas/Fort Worth Frequencies

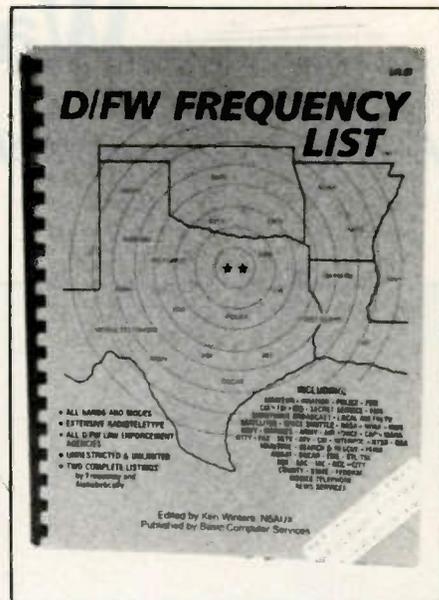
Ken Winters (N5AUX) just issued his new 3rd Edition of the *D/FW Frequency List*. This is 148 pages worth of hard information on all manners of frequencies and stations you can hear from the D/FW area on frequencies between VLF and microwave.

Stations covered include broadcast, Ham repeaters, SWBC, business/industrial, RTTY, press, search/rescue, news media, mobile 'phone, public safety, etc. Listings

are arranged according to frequency and also according to the type of communications service in which they are engaged.

This is an excellent directory, done with care, expertise, and the insight that comes when police/fire listings are compiled by an active monitoring enthusiast headquartered in the same area as the directory's coverage. We've examined national coverage directories put out by companies in North Carolina, Massachusetts, California, and Florida that simply don't hack it.

Recently, when I stopped by an electronics store in Tucson, I spotted yet another ambitious new police/fire frequency directory promising national coverage. Being an avid collector of frequency data, I added this edition to my reference library. What a disappointment! The people who issued the book probably never set foot in The Grand Canyon State. There was a lot missing. What's worse, so much of what was there was incorrect to one degree or another, especially in the area of the usage of specific frequencies employed by various agencies. Moreover, the compilers had obviously cribbed some of the book's listings from other directories. A few telltale typographical errors made by the compilers of the earlier listings turned up in this publication, adding a "smoking gun" aspect to the deed!



Ken's excellent *D/FW Frequency List* contains more than 4,000 frequencies. If you're in or near the D/FW area, you'll find this book to be a useful, accurate, and complete data source. This book sells for \$19.95 from Basic Computer Services Co., P.O. Box 14193, Arlington, TX 76013. Tell 'em you saw it in POP'COMM! **PC**

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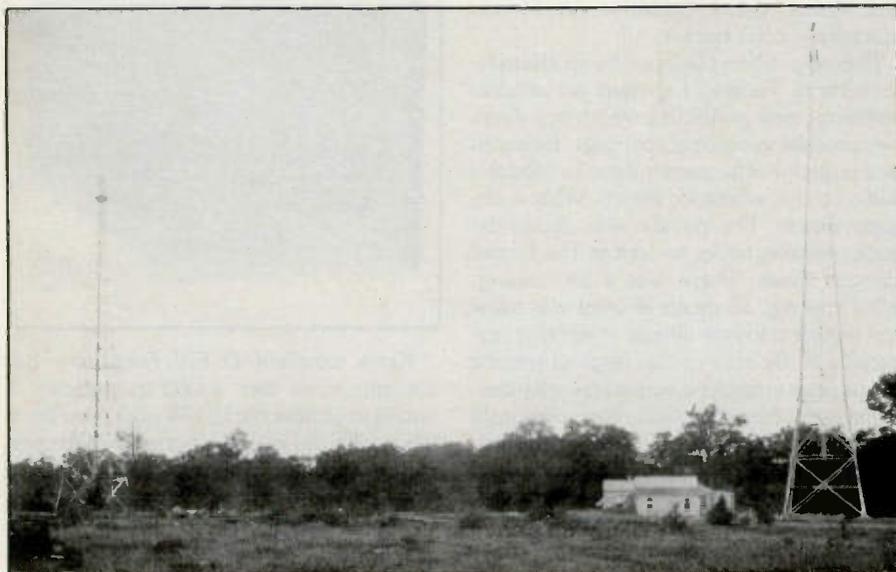
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Way Back When

A Gentle Look Back To Radio In Earlier Times

BY ALICE BRANNIGAN



Early broadcaster WHT before it changed callsigns and became WCHI.

In 1924 radio station WHT was located in Rogers, Michigan and being operated by the Michigan Limestone and Chemical Co. But WHT was operating on 167, 170, 400, 500, and 1000 kHz. Don't let that 1000 kHz frequency fool you into thinking WHT was a broadcaster—it wasn't. This was a coastal telegraph station used to communicate with vessels on the Great Lakes. By the following years things had changed; the "old" WHT was scrubbed and the callsign was quickly assigned to another station—a real broadcaster.

By mid-1925 the callsign WHT had been reassigned to the Radiophone Broadcastinging Co. for their new station, with studios in Chicago's Wrigley Building (410 North Michigan Boulevard), and transmitter located on Waukeegan Road in nearby Deerfield, Illinois. This station operated with 3500 watts on no less than two frequencies, 750 and 1260 kHz. The callsign, observed the Radiophone Broadcastinging Company, stood for "Write Home Tonight."

By 1929, WHT had settled down with 5 kW on 1480 kHz where it shared time on the frequency with Chicago broadcasters WIBO, WJAZ, and WORD (although WIBO shortly thereafter split the scene to operate on 570 kHz and later on 560 kHz). The year 1930 saw WHT trade in its pioneer 3-letter callsign for a new one, WCHI, thus incorporating the first three letters of "Chicago" into its identity. Also, WCHI moved to 1490 kHz where it shared time with WCKY in Cincinnati, Ohio.

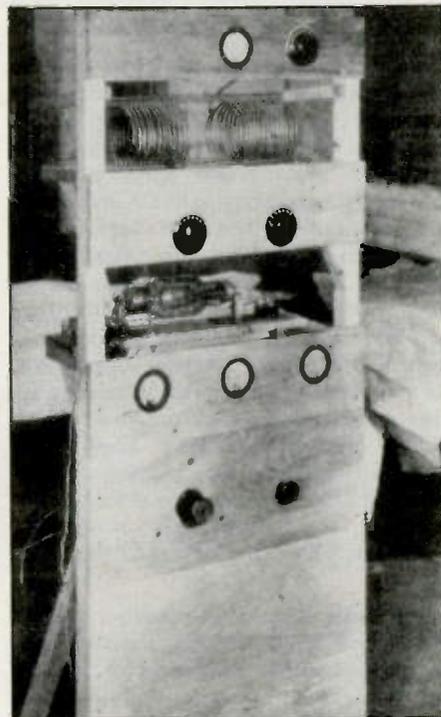
In early 1931, the owners of WCHI became the People's Pulpit Association of 201 North Wells Street in Chicago. Within months the station again changed hands and became the property of the Midland Broadcasting Company. It was obviously not a change for the better because by mid-1932 WCHI was out of business and gone forever from the airwaves, forced off the air because WCKY had been FCC-authorized to use the frequency on a full-time basis.

Our photograph shows the Deerfield, Illinois transmitting site with two steel lattice towers flanking a small wooden structure resembling a residence. The photo was taken some time between 1925 and 1930.

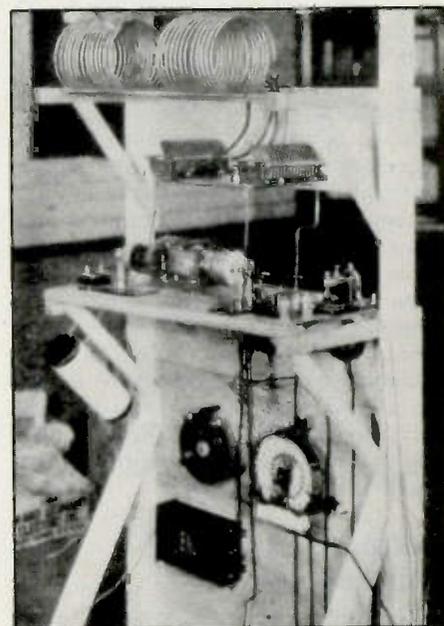
Canadian Communications

The Ontario Hydroelectric Commission was an early user of communications. We came across a 1926 photo of the OHC's station C9AQ that operated on 10,000 kHz days and 5996 kHz nights. This station communicated daily with OHC's headquarters (callsign C9AI) in Toronto, 600 miles distant. C9AQ was located at the Cameron Falls power station (near Port Arthur), which supplied electricity to the twin cities of Fort William and Port Arthur.

The 250 watt rig at C9AQ wasn't much in the way of looks, having been hand-constructed breadboard-style on several wooden chassis mounted in a wooden rack. The bottom line was that it worked just fine!



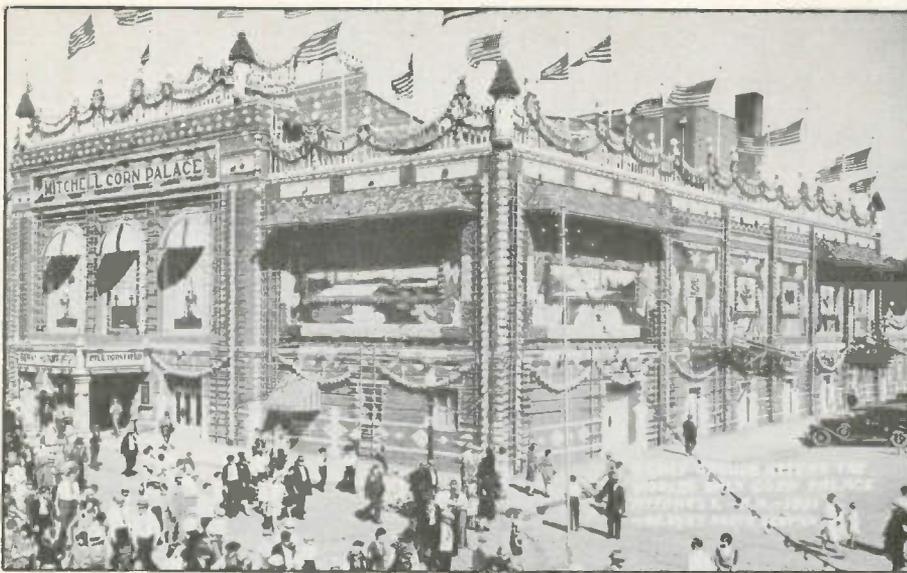
Canadian station C9AQ was built in a wooden rack.



C9AQ ran 250 watts on two frequencies 5996 and 10000 kHz.

What About KGDA?

You've possibly been wondering what ever became of station KGDA. So have we, especially when we got a look at the fantastic



KGDA started out with 15 watts and ended up in The Corn Palace!

building in which the station was located in the later years of its somewhat short career.

KGDA popped up with a 15 watt signal on 1180 kHz in 1926. It was the prize baby of the Home Auto Company of Dell Rapids, South Dakota. By 1929 it was well on its way to fame and fortune, having shifted to 1370 kHz and upping its power to a full 50 watts.

In 1930 the big move came when KGDA was purchased by the Mitchell Broadcasting Corp. and moved to its new location on the second floor of the fabulous Mitchell Corn Palace of Mitchell, South Dakota. Also, KGDA's power was run up to a withering 100 watts. Unfortunately, by early 1934 the station had become history.

Our photo postcard of the Mitchell Corn Palace is on the flip side of a 1931 QSL from KGDA. When this photo was snapped, the Palace was featuring "Bill Dornfield, Mystic Master of Ceremonies," and also "Benny Meroff and his Versatile Orchestra." The photo was taken in 1931 upon the occasion of the 23rd Annual Mitchell Fall Corn Festival. On the other side of the card, in long-hand, appears the message: "Thanx, Report OK. Here is our verification. Our studio is on floor 2 of this bldg., the world's only Corn Palace, KGDA."

We wonder if this magnificent structure still exists. Next time someone asks you if you know what became of KGDA, you'll be right there with the answer.

From Wisconsin

Here's a look at station WIBU of Poynette, Wisconsin. Poynette is a community in the south central part of the state, 25 miles north of Madison. Some 1500 souls abide in Poynette.

WIBU fired up its transmitter for the first time in 1925 with 20 watts on 1350 kHz. At that time it was operated by The Electric Farm. By 1929 it was running 100 watts on 1310 and being operated by *The Wisconsin State Journal*. William C. Forrest was operating WIBU by 1930 and the station re-



Station WIBU in Wisconsin has used many frequencies.

mained on 1310. By the mid-1930's WIBU had shifted to 1210 kHz, however, records of the 1940's show that Mr. Forrest had again changed WIBU's frequency, this time to 1240 kHz with 250 watts.

Today, WIBU remains on 1240 kHz but runs 1 kW (250 watts at night). It is licensed to The Robert P. Hansen Broadcasting Corp., P.O. Box 8303, in Poynette.

Our view of WIBU is via an undated photo showing the station housed in a "sort of" Art Deco cement or stucco structure. The callsign can be seen extending from a marquee. Lying on the floor of the front porch is a sign (it's actually propped up against the wall). It reads "Transmitter of WIBU."

Admits To Propaganda

It's frequently mentioned how "propaganda" has become a jaded word ever since the days of WWII. From the looks of the 1936 QSL sent out by shortwave broadcasters PRF5, the word seemed quite acceptable in pre-war times!

PRF5 operated on 9501 kHz from 1845 to 1945 GMT with a 50 kW signal. The transmission consisted of the "Brazilian Hour," and PRF5 was operated by Brazil's National Department of Propaganda. This Department produced programs for a network of 30 medium wave stations throughout Brazil. The shortwave broadcast over



Brazilian shortwaver PRF5 admitted it broadcast propaganda!



Oregon's KGW has been on the air for 63 impressive years!



The Sea Gate wireless station. Huh?

PRF5 was sent out over the facilities of the Cia. Radio Internacional de Brazil.

No modern broadcaster would dare own up to broadcasting propaganda, but a rose by any other name . . . sayeth old Gertie. Right?

Early Oregonian

Station KGW was, indeed, one of the nation's pioneer broadcasters. The station commenced broadcasting in 1922 under the auspices of the Portland Morning Oregonian. It ran 500 watts on 610 kHz in the early 1920's.

By 1930, as operated by The Oregonian Publishing Co. (6th and Adler Streets, Portland), KGW operated on 620 kHz with 1 kW. By the 1940's the station was running 5 kW, a power level that KGW still retains.

An undated QSL from KGW was apparently issued in the 1930's and confirms reception of "Dr. Poyntz Science Talk and Bagdad Organ" (what would you give to hear a tape of those two gems?).

Whatzit?

Here's a stumper, a postcard we found showing what is described as "Wireless Station At Sea Gate." The card is not dated but is obviously from the early days of radio. It

shows a single heavily-guyed mast standing next to the building at the left.

Sea Gate is a location in Brooklyn, New York just west of Coney Island. In fact, Sea Gate is the first land area at the eastern side of the entrance to the New York City harbor area. Undoubtedly this station was used for communications with ships at sea, although I can't seem to find out its callsign, frequencies, or owner. Any ideas, gang?

Identified

V. Marescu of Florida passed along a photo that he thought our readers would like to see, although he couldn't tell us much about the scene it depicts. It's actually a photo postcard that dates from the 1920's.

The scene shows a section of Puerto Rico, with some small shanty type structures and a field of tobacco plants in the foreground. Up on a hill towards the center is a long building and three huge radio towers. The caption on the card reads: "Henry Barracks and Radiorim Stations, Cayey Pto. Rico."

We have determined that the towers belong to U.S. Naval station NAU. In 1924 this station was operating on: 32.8, 33.8, 43, 62, 76, 105, 125, 315, and 500 kHz. By 1931 it was using 113 and 500 kHz. Sorry, the word "Radiorim" still puzzles me.

The Station That Never Was

We have a postcard showing a very impressive looking wireless station located on



Hard to see NAU's 3 big towers in this old photo. They're dead center on the horizon.



The formidable Mt. Tamalpais, California wireless station that never went on the air.

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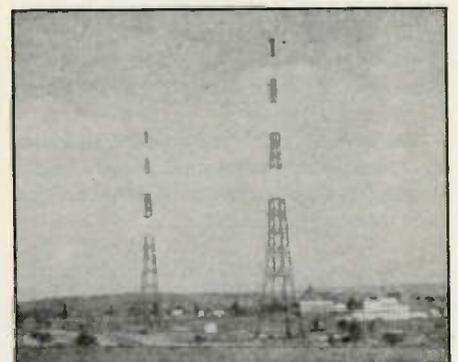
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the summit of Mt. Tamalpais, California, 2600 feet above San Francisco Bay. To the best of our knowledge, the Pacific Wireless Company constructed this coastal telegraph station just before the big earthquake struck San Francisco in 1906. For one reason or other, this station was never licensed or put on the air, although it seemed to have survived the earthquake and stood in place for at least several years.

Our view shows two towers, although other versions of this same postcard show the towers supported by an extensive network of guy wires (which is probably the way it was, although the towers themselves don't show up as clearly).

Czech This One Out

From 1935 comes a photo of the towers of a station known as Prague I, located in Liblice, Czechoslovakia. This 120 kW powerhouse operated on 638 kHz and was widely reported by North American night



This Czech station on 638 kHz was heard by many North Americans.

owls tuning the broadcast band, even through the signals of American stations such as KFI operating only 2 kHz away from Prague I's frequency!

In those days, Canadian and American listeners seemed to be hearing TA's (Trans-



Valparaiso, Indiana was the home of 9XD and later W9YV.



Best wishes for a happy holiday season.



Alice calling to say, "I hope Santa brings you that radio of your dreams!"

Historic Ham QSL's



This WWII map of Palmyra reproduced from *Cryptolog*, official publication of the Naval Cryptologic Veterans Association, 3421 Stark St., Eugene, OR 97404, our good friend Graydon Lewis, Editor.

Guess I was inspired by Tom Kneitel's report of his visit to Swan Island; or maybe it's that December makes me think of tropical isles. Anyway, here's a historic DX card from KG6MV from Palmyra Island in 1940, just before the outbreak of WWII. Palmyra is one of the Pacific's Line Islands about 1,000 miles SW of Hawaii. It's 5 miles long by 1½ miles wide. In 1939 our government began building an airstrip on Palmyra. When WWII broke out, the island became a major U.S. military installation with roads, communications (callsign NIX) and RDF facilities. Some 6,000 members of the American military were stationed there, but in 1948 the government ended their operations there, leaving it abandoned. In 1979-80 a small group of Gilbertese inhabited the old 2-story USMC barracks and about two years ago a Canadian and his daughters were shipwrecked there. Today, Palmyra is totally abandoned without a single resident, although the cinderblock crypto building and some other WWII bunkers and structures still exist to one extent or another. According to the authoritative book *Uninhabited and Deserted Islands*, Palmyra is technically under the administration of the U.S. De-

partment of The Interior, but in actuality it is privately owned and supposedly up for sale—lock, stock, bunkers, and overgrown airstrip!

Palmyra's WWII LF radiobeacon was known as JY on 326 kHz. KG6MV was one of Palmyra's prewar Hams. After the war the FCC changed Palmyra's Ham prefix to KH5 and also KP6. A deserted island needs two Ham prefixes like it needs two used car lots.

In 1940, KG6MV was using an RME receiver and a 125 watt CW rig. You just don't see Palmyra QSL's anymore. Palmyra is a "lost DX country" in every sense of the term.

Atlantic stations) with considerably more ease than in recent years (no thanks to so many high-powered all-nighters on this side of the big puddle).

School Daze

Will Jensby, W0EOM/6, furnished this column with a 1915 postcard showing "Dodge's Telegraph, Railway and Radio (Wireless) Institute" of Valparaiso, Indiana. You can see the tower and part of the antenna wires in the background. This school was established in 1874 and became quite well known, even in more recent years under its subsequent name, Valparaiso Technical Institute.

Our postcard, showing the school at 405 Monroe Street, was licensed under experimental callsign 9XD in 1924. By 1930 it had obtained a "Technical and Training School" license under the callsign W9YV.

I'll leave you with a very special wish for a great holiday season. May Santa bring you that dream receiver. PC

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



The ICOM IC-R7000 Receiver

For monitoring all amateur radio frequencies, ICOM has introduced the IC-R7000 25-2000 MHz (specifications guaranteed from 25-1300 MHz) continuous-coverage receiver. The IC-R7000 also covers aircraft, marine, government, emergency services, and television bands. The IC-R7000 features 99 memory channels, direct keyboard frequency access or main tuning knob access, FM/AM/SSB modes, scanning (memory, mode, and programmable or priority), adjustable scanning speed, narrow/wide filter selection, five tuning speeds (0.1, 1.0, 5, 10, 12.5, or 25 kHz), fluorescent display with dimmer switch, noise blanker, and more.

The IC-R7000 is 4 $\frac{3}{8}$ "H x 11 $\frac{1}{4}$ "W x 10 $\frac{7}{8}$ "D. Also available are an optional RC-12 infrared remote controller, and optional voice synthesizer. The units sells for \$899. For more information, contact ICOM America, Inc., 2380 116th Ave., N.E., Bellevue, WA 98004, or circle number 102 on the reader service card.



Automatic Stat Mux Dial Backup Capability

In an on-going program to provide their customers with enhanced features for new or existing Backus Data Systems, Inc., Dialmux of Linemux statistical multiplexer systems, the Company recently announced a new automatic dial fall back (ADF) option.

The ADF feature is available to those users who purchase either Dialmux units for operation over the switched dial up telephone network with intention to eventually convert to leased lines or those customers who install the Linemux version and have an immediate requirement for fall back protection to an alternate circuit in the event the primary leased line becomes disrupted.

When installed with the Backus multiplexer units, the ADF feature will automatically sense when data is not being transmitted and receive properly via the leased line circuit and will issue a prestored telephone number to a standby 2400 baud auto dial modem to establish an alternate connection via the Direct Distance Dial (DDD) switched telephone network.

During the process of error detection and automatic dialing, no data is lost, nor is data lost after the alternate standard telephone line connection is established. In either case, the Dialmux/Linemux systems continue their error detection retransmission protocols regardless of the circuit route.

Other safeguards such as automatic redial for clean telephone lines in case of noisy line conditions or redial in the event of unexplained line disconnects is included. The ADF option also provides a user programmable line disconnect "timer" to assure line disconnect after a specified amount of idle time.

Standard Dialmux/Linemux features such as call-back security and channel switching capabilities are not affected during or after circuit swapping.

Pricing for the new ADF option is \$195 per unit when ordered at time of stat mux purchase, or it can be installed on previously purchased units by returning units to the factory for installation at an additional charge of \$100 per unit.

For more information, contact Backus Data Systems, Inc., 1440 Koll Circle, Ste 110, San Jose, CA 95112.



Slim Line Cellular Phone

New from AudioTel, the cellular mobile communications division of Audiovox Corporation, is the CMT-500 slim line cellular telephone.

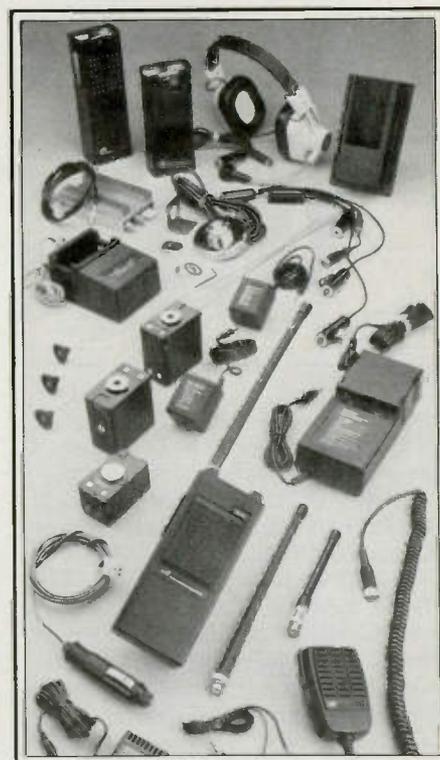
The newest Audiovox phone has a variety of convenience features, including a variable timer that is set by the operator. It can measure elapsed time of the current call, total elapsed time in minutes or seconds, or total number of calls in a specific time frame.

Other CMT-500 features are a multiple A/B switch and mute.

Full duplex hands-free operation is available for the CMT-500 via the cradle speaker and optional microphone. Also optional is an electronic message recorder that announces where the CMT-500 owner can be reached or prompts callers to leave their number.

The CMT-500 retails for \$2295 and is now available through Audiovox dealers nationwide. With the full duplex option, the CMT-500 retails for \$2495.

For more information on the complete line of AudioTel cellular telephones contact: Audiovox Corporation, 150 Marcus Blvd., Hauppauge, NY, or circle number 114 on the reader service card.



Catalog Of Accessories

Communications Specialists has announced the availability of a complete catalog of all accessories for use with the TR-720 Hand-held Airband Transceiver. The catalog includes a picture, description, and the price of each item. Since the TR-720 was first introduced almost two years ago, Communications Specialists has developed a wide variety of accessories to improve the convenience and utilization of the radio. A total of 23 different accessories makes the TR-720 the most versatile of all hand-held radios available. For more information, contact Communications Specialists, Inc., 426 West Taft Avenue, Orange, California 92665, or circle number 106 on the reader service card.

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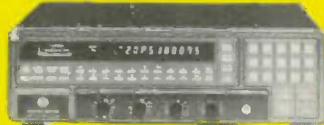
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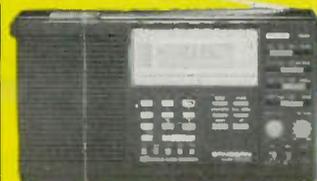


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ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

Tropical And MW Slant-Wire Antennas

The slant-wire is a good performing and easy antenna to erect. This column's previous examples showed how various slant wires can be erected when mounting space is limited. The slant-wire antennas that follow stretch out fully and can also be used for operation on even lower frequencies. A versatile PVC mast assembly is described that raises the top of the mast a bit higher and provides a simple means for attachment of the coaxial transmission line.

The mast assembly consists of two 10-foot sections of PVC piping and a short 2 foot section that is telescoped 1 foot into the top of the middle 10 foot section (Figure 1). Two bolt/nut assemblies serve as terminals at the top of the 1 inch, 2 foot section (Figure 2). This method was described in an earlier column. The inner conductor of the coaxial transmission line and the slanting wire end are attached to one terminal. The braid of the coaxial line only is connected to the other terminal. However, it is apparent that this terminal combination can also be used for constructing dipoles and other types of antennas.

Mast can be lifted off its support very easily and lends itself to antenna changes and experimentation. Coaxial line can be taped at several positions as it is run down the mast to the height level at which it can branch off to the radioroom. In our operations we attach only a 20-foot section of coax line and then use appropriate connectors to attach to the longer section of line that is linked to the radio room.

A slanting wire of 71-foot length provides reasonable all-band performance 11 through 90 meters. On bands 31 through 90 meters, the pattern is reasonably omnidirectional, although there is some directivity broadside and in the direction of the wire slope. The extent of the directivity increases toward the higher frequency bands. The directivity is more pronounced on bands 11 through 25, with a reduction in broadside pick-up. The maximum directivity is in the direction of the wire slope and, to a lesser degree, to the direction exactly opposite to the slope. Thus, if space permits, you may wish to string out the slanted-wire antenna in some favored direction. In our example it was stretched out at a 45° bearing to provide that slightly improved pickup toward EU. Bear in mind that it is a compromise antenna and its sensitivity, although reasonable, does vary from band to band. To maintain a reasonably constant slope for the wire,

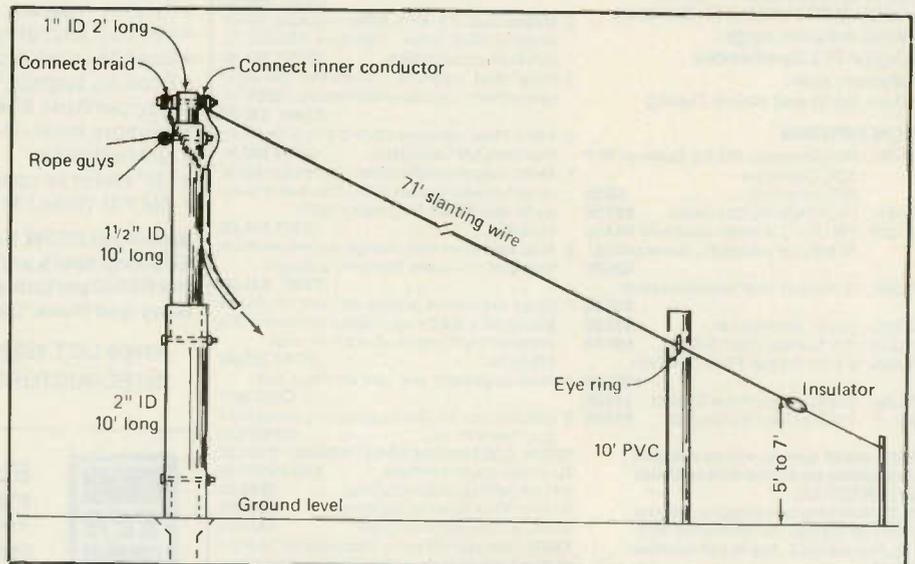


Figure 1: Slant-wire antenna.

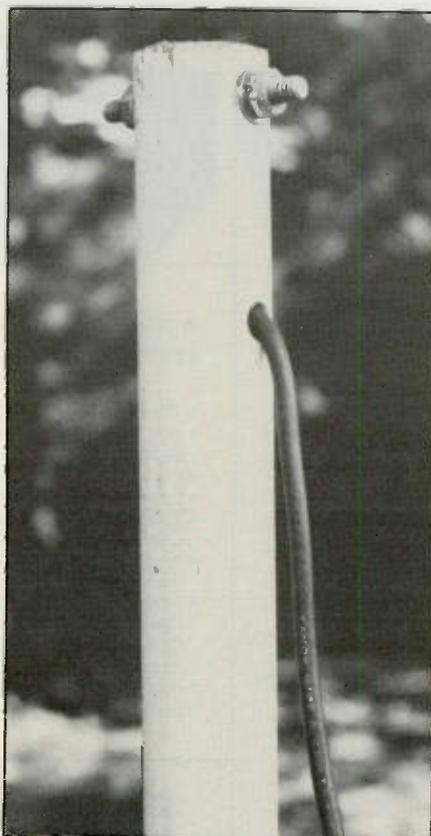


Figure 2: Antenna wire terminals mounted at top of mast. Coax leads are attached to eye solder lugs and held by bolt heads internally.

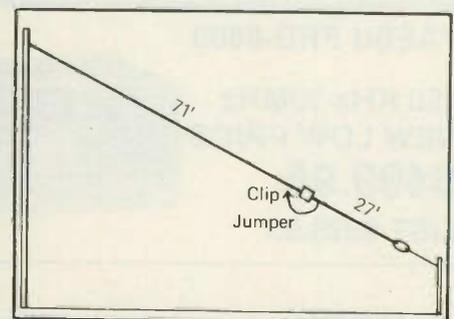


Figure 3: Add-on for 120 meters.

you may wish to use an additional 8-10 foot section of PVC piping as shown in Figure 3. Pass the wire through an eye-ring attached to the mast. Then position the mast to maintain a constant wire slope with an end height of between 5 and 7 feet just ahead of the insulator.

120 Meter Addition

An add-on section of approximately 27 feet can be used to peak the 120 meter band when desired. The added length also helps in picking up marine radio activity in the 2-3 MHz spectrum. As compared to the usual shortwave broadcast antenna, there is a rise in signal level for the 160 meter ham band and AM stations that operate at the high-frequency end of the broadcast band. It is a simple matter to clip on the added segment when you wish to do some medium wave

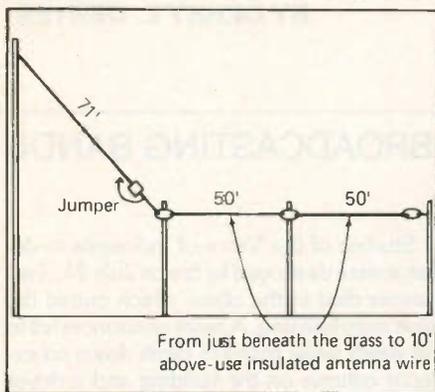


Figure 4: Add-on for high-frequency end of MW broadcast band.

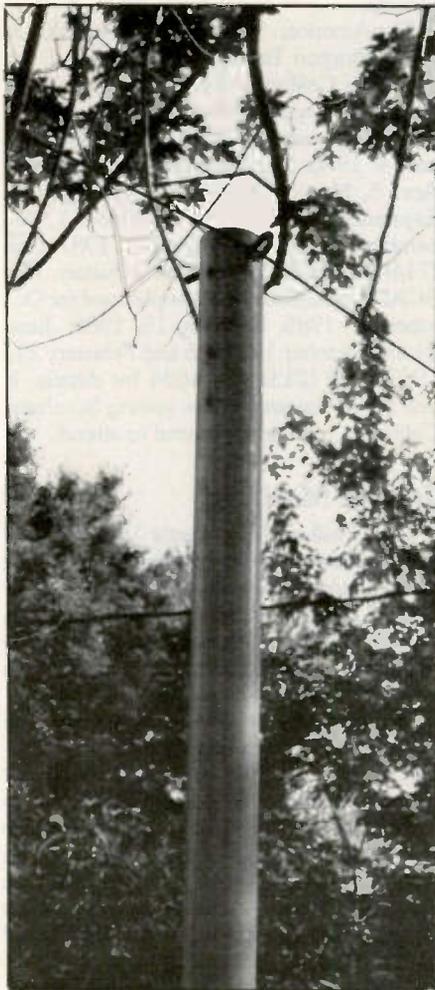


Figure 5: Antenna wire fed through eyes of bolts for the low masts of the MW add-on.

listening. Although both versions provide good all-band performance, some special tests against a reference antenna indicated one or the other of the two lengths was found to be the better combination for various bands. On most bands there was no great difference, however, a definite edge could be found for each band when the signal you wish to receive is weak or you desire the most solid signal for best program listening. Also, interference rejection from a particular station might well be a consideration in choosing the more suitable length. In general the 98 foot length had the edge on the

120, 49, 41, 31, and 19 meter bands. The general performance of the 71 foot length was better on the 90, 75, 60, and 16 meter bands. The two lengths performed identically on the 25 meter band for my particular 45° orientation.

Some Special Slants

If you are a BCB DXer as well as a short-wave listener, consider the arrangement of Figure 4. In this example a 100-foot length can be jumped onto the end of the 71-foot shortwave slant wire. The added 100-foot segment sets up a medium-wave broadcast antenna of approximately 171 feet corresponding to a quarter wavelength in the vicinity of the graveyard channels on the broadcast band. The added length of antenna wire need not be elevated and can be supported by two additional short lengths of PVC piping. Feed the antenna wire through eye-rings (Figure 5). Actually, a medium wave added section can be positioned anywhere from just beneath the grass to about 10 foot above the surface. Of course, use insulated antenna wire.

The antenna was tested and compared with a second graveyard antenna in use at my site. One antenna had its wire toward the east; the other, to the west. On 1230 WEEZ Easton was picked up better on the east

wire. WHUM Reading was stronger on the west antenna for 1240. A second Easton station, WEST, was also favored on the east antenna. On 1490 WBCB Levittown also favored the east antenna. Signal strengths were different but really not an important amount for listening pleasure. However, the advantage of two separate antennas was demonstrated for the graveyard frequencies of 1340 and 1450. On the latter frequency, WILM Wilmington dominated on the west antenna. However, on the east antenna it was possible to ID WCTC from New Brunswick, New Jersey. All of these tests were made approximately at 8 a.m. in the morning. Most unusual were the results on 1340, with WHAT Philadelphia approximately 20 miles from here coming through on the west antenna. On the east antenna it was possible to receive WMID Atlantic City. WHAT was almost completely gone and the pattern of the west antenna must have a deep minimum in its direction. Just a quirk it is true. However, it does demonstrate the possibilities for deep trenches in your receiving antenna that may be very deep in one or several directions. Two antennas with their separate lines and ability to make fast change over with a two-position coaxial switch can often be a help for IDing as well as pleasurable listening. But more about medium wave antennas in a later column. **PC**

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LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

You shoulda been there! The 1985 convention of the Association of North American Radio Clubs in Milwaukee was, as usual, the event of the year for radio listeners. The crowd of about 250 people enjoyed excellent talks and seminars, an exhibit hall filled with goodies, endless hours of talk about radio, and excellent food.

We were delighted to meet Ian MacFarland of Radio Canada International, Bob Zanotti of Swiss Radio International, Wolfgang Pleines from the Voice of Germany, George Wood of Radio Sweden International, Gene Reich of the Voice of America, and Andy Sennitt, assistant editor of the *World Radio TV Handbook*. Acquaintances were renewed with Jeff White and the crew from Radio Earth, Bruce Elving of the FM Atlas, Jeanne Ferrell of Gilfer Shortwave, Clayton Howard former host of HCJB's DX Party Line, and Fred and Barbara Osterman of Universal Shortwave Radio. There were dozens more who somehow escaped a hello and a handshake. *Maybe next year!*

Recipients of this year's special ANARC awards were Larry Lundberg of Brooklyn Center, Minnesota who received the 1985 North American DX'er of the Year Award. Larry has been a listener since 1923 and was cited for his long service to the hobby and his assistance to newcomers. International DX'er of the Year honors went to Ralph W. Perry of Kuala Lumpur, Malaysia for his expert sorting out of the Indonesian stations. Perry, incidentally, won North American DX'er of the Year last year, reflecting his DX from Dallas, Texas. International Broadcaster of the Year went to Willis Conover of the Voice of America for his many years of highly popular Music USA broadcasts.

The first Radio Earth program to go out over the new KCBI in Dallas was taped before a live audience at the convention (and very late at night it was, too). KCBI began regular broadcasts on July 28 and Radio Earth had its first on August 4. Radio Earth will now air regularly on Sundays from 1800 to 2100 on KCBI, 11.790.

Radio Beijing recently cut back on its number of hours of English for North America. Now, they may be eyeing expansion plans. Word is that the station is aware their broadcasts are often poorly received here and that additional frequency usage is being considered, as is the possibility of building relay stations outside of China or renting time on existing stations.

It has been some 15 years since any English language programs went out from Radio Denmark. A campaign is underway now to get that changed. If you'd like to have English programming on the Danish radio's



Larry Lundberg of Brooklyn Center, Minnesota, named ANARC's North American DX'er of the Year for 1985.



William Burke of "DX'ers for Bob" at his downtown Richmond, Virginia shack. Receivers include the Kenwood R-11, Hallcrafters S-120, and Sanyo M9903K.

shortwave service (Spanish too, for that matter) send a letter to Roger Atkinson, Gillesager 272, 5 TV, DK-2650 Hvidovre, Denmark. Every letter helps.

The extensive expansion of the Voice of America continues and here are some projected completion dates for various phases of the project: Costa Rica relay station (probably medium wave only) in the fall of 1987, relays in Thailand and Sri Lanka, fall 1990, and relays in Puerto Rico and Tangier in the fall of 1991. Still further down the road are new relays in East Asia, improvement to the Botswana relay (with the addition of shortwave), improvements in relay sites at Rhodes and Kavala (Greece), and a new Middle East relay station. You needn't start tuning for any of these just yet.

Speaking of relays, the Voice of Germany's Sri Lanka relay, thought for a time to be a lost cause due to raids by Tamil guerrillas, is now back in business. The facility was left undamaged and the station is back on the air.

The Qatar Broadcasting Service is building a powerful new shortwave station at Al-Khadai which is designed to give the station worldwide coverage. Completion dates aren't known, nor is the power, but 500 kilowatts seems a safe bet, especially in this day and age.

Studios of the Voice of Indonesia in Jakarta were destroyed by fire on July 21. Two people died in the blaze, which gutted the nine story building. A news announcer fell to his death while trying to climb down an exterior column on the building and a driver died of smoke inhalation. The Voice of Indonesia returned to the air about two hours later, programming from a studio outside Jakarta.

The American Shortwave Listener's Club in Huntington Beach, California and the Southern California DX'ers based in Long Beach have both announced dates of their upcoming meetings. ASWLC will meet January 4, 1986, then on February 1, March 1, April 5, May 3 and 31, July 5, August 2, September 6, October 4, November 1, December 6, and January 3 and 31, 1987. Call (714) 846-1685 for more information. The SCADS group has sessions planned for October 19, 1985, February 15, 1986, June 21 and October 18, 1986 and February 21, 1987. Call (213) 424-4634 for details. If you live in the area or are visiting Southern California, you are welcome to attend.

In The Mailbag

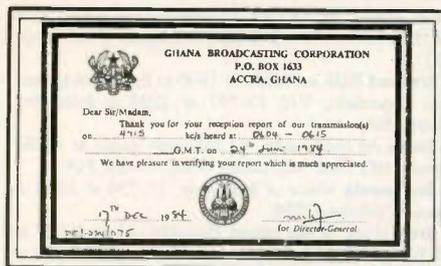
The mailbag finds Gayle Van Horn of Orange Park, Florida checking in for the first time. Gayle got interested thanks to her husband Larry who writes the "Signals From Space" column in *Monitoring Times*. Gayle is already up to 162 countries logged. Africa and Oceania are her favorite target areas.

A while back we asked that you not send reports for other columns to us for forwarding. Steven Johnson of Omaha asks if that means having to send a separate letter to each editor if he wants to contribute to more than one. That's what it means. But, you can put all those letters into one envelope (with your name and address on each letter), send the package to POP'COMM and use only one or two stamps.

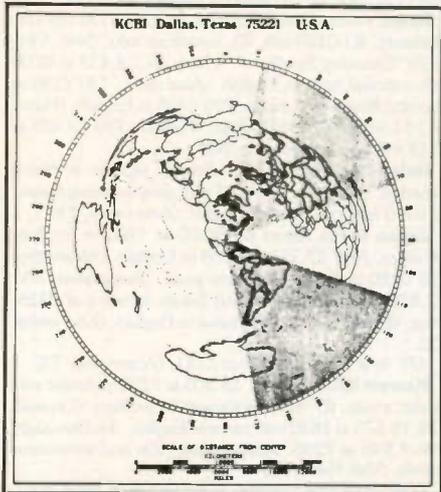
William Burke of Richmond, Virginia, whose letterhead trumpets something called "DX'ers for Bob" and "Intrepid Sports Publications," sends us some nice QSL copies which we hope to use in the future, and a shack photo which appears this month.

So we report that Ghana is discontinuing QSL'ing and what happens? The day after he reads that Randy S. Coupal of Ayer, Massachusetts finds a QSL from Ghana in his mailbox! Either they are just using up their cards, or your report was so outstanding they couldn't resist replying, or the policy went into effect without people at the station knowing about it, or the policy doesn't exist at all, or . . .

Captain Walter Gerin of Kenai, Alaska, who is originally from Trieste near Venice,



Randy Coupal of Ayer, Massachusetts found a Radio Ghana QSL in his mailbox.



The QSL being sent out by the new KCBI in Dallas, Texas.

enjoys catching Italian language programs on shortwave as he commands gas tanker ships sailing Alaska to Japan. He's found Radio Korea uses about three hours per day in Italian.

Andrew C. Crowell of Nashville, Tennessee had to bid farewell to his beloved 1,100 foot inverted L antenna when he moved from a farm into the city. But he's found room for a 105 foot inverted L, which is doing a nice job for him. Andrew wonders about Mexico's La Hora Exacta on 9.555. The station isn't new, it has been on and off the air for years. Our QSL is dated sometime during the 1950's.

David Patton of Signal Mountain, Tennessee wonders about Radio Columbia on 4.825. He says it seems a rather strange station. Maybe. They've run some anti-Sandinista programs in the past, but as far as we can tell it's a commercial operation. The power is 10 kilowatts, call TILX and address: Apartado 708, San Jose, Costa Rica.

Another returning to the listening fold is Paul Balwierz of Burbank, Illinois. Paul is using a DX-400. It's very difficult to answer your questions, Paul. A good way for any newcomer or returnee to get re-started might be to order the catalogs from shortwave equipment dealers advertised in POP'COMM. Then you'll get a better idea of the wide variety of receivers and other equipment, the books and DX aids available to help you get your feet wet faster.

Let's have a letter or loggings from you next month. Loggings should be by country, with your last name and state abbreviation

after each item. Items should be double spaced (at a minimum) and please use only one side of the paper. We also welcome your questions, observations, shack photos, clippings schedules, and copies of QSLs.

Listening Reports

Here's what's on. All times are GMT.

Afghanistan Radio Afghanistan on 11.880 at 1914 in English to Europe. (Ligenfield, VA)

Alaska KNLS on 11.850 with sign on in English at 0700, very weak. (Griffith, CO)

Albania Radio Tirana on 7.120 at 0135 to sign off with anthem at 0155. (Myers, MO) 0235-0258 in English. (Abernathy, TX)

Ascension Island BBC Relay in English on 15.260 at 2136. (Wallace, NM) English to Africa at 1811 on 15.400. (Pastrick, PA)

Antigua DW Relay on 9.735 at 1100 with site ID, into Spanish. (Dementiuk, SC) 9.545 sign on in English at 0500. (Griffith, CO)

Argentina Radio Nacional, 6.060 in English at 0315, QRM from Arabic-speaker. (Linonis, PA)

RAE on 9.690 at 0151 with English to North America. (Pastrick, PA) 11.710 at 0430 with DX program in English. (Myers, MO) 0145, parallel to 9.690, announced English at 0100 and 0400 on both frequencies plus 1200 and 1800 on 15.345. (Abernathy, TX) 0125 in English on 11.710. (Neff, OH)

Australia Radio Australia, world news at 1400 on 6.060 and 9.580. (Richards, MO) 17.795 at 2300 with news in English. (McDonough, PA) 11.910 in English at 0427. (Abernathy, TX) 15.320 and 15.395 at 0648 in English. (Pastrick, PA) 11.790 in English at 0341. (Neff, OH)

VLW15, Perth on 15.425 at 0500 with domestic news. (Hawk, NE)

VLQ9 Brisbane, 9.660 at 0849 with pop music, QRM'd by Radio Rumbos sign on at 0856. (Crowell, TN) VNG time station at 0620 on 12.000. (Pastrick, PA)

Austria ORF on 11.660 at 2100 in apparent German. (Johnson, NE) 5.945 at 0130-0150 in English. (Linonis, PA) 6.000 at 0130 in English. (Abernathy, TX) 9.635 at 0135 in English. (Hunt, NC) At 0430 in English. (Wallace, NM) 15.465 English to Africa at 1837. (Pastrick, PA)

Belgium BRT on 9.925 with "Brussels Calling" at 0115. (Hunt, NC) 5.910 at 0106 with BRT Listener's Club. (Abernathy, TX) 0051 with Music Box. (Pastrick, PA) 0100-0130, dual 9.880. (Linonis, PA)

Belize Radio Belize on 3.285, 0305 with news, weather, music. English. (Abernathy, TX)

Bolivia Radio Nacional Cochabamba, 5.975 at 1019 in Spanish. (McDonough, PA)

Burkina Faso RTB on 4.815 in French with African high life music, several IDs to 0002 sign off. (Van Horn, FL) 0600 in French with music program. (Dementiuk, SC)

Brazil Radiobras, 11.745 at 0230 in English with music. (McDonough, PA) 0236 in English. (Neff, OH) 0225 English and Portuguese IDs. (Linonis, PA) 0211 with talk. (Pastrick, PA)

Radio Nacional Amazonia 11.780 with echo IDs and strong signal most of the day. Noted at 1830. (Richards, MO) 2000 sounded like sports. (McDonough, PA) 2236-0003 in Portuguese, lots of ads. (Abernathy, TX) 6.065 with news at 0800. (Dementiuk, SC) 2337 in Portuguese. (McDonough, PA)

Voice of America via Radiobras, 17.885 at 1252, ID and news of Central and South America. (Van Horn, FL) Radio Inconfidencia at 0228 on 15.190 with Portuguese IDs, announcements, Latin music. (Paszkiwicz, WI)

Radio Nacional Manaus, 4.845 in Portuguese at 0210, IDs, Brazilian pops. (Van Horn, FL) 0208 with excited announcers. (Abernathy, TX)

Radio Brazil Central, 4.985 at 0534 US country/western. (Ligenfield, VA) 0335. (McDonough, PA)

Bulgaria Radio Sofia English on 9.700 at 2130, ID, news, music. (Van Horn, FL) 11.750 at 0312 English to North America. (Pastrick, PA) 0330. (Wallace, NM) 11.765, 0342 with news and music. (McDonough, PA) 11.870 at 0300 in English. (Linonis, PA)

Canada Radio Canada International, 5.960 at 0327 in English. (Abernathy, TX) 6.140 at 0600 English and French to Europe, Africa, Middle East. (Pastrick, PA) 9.755 at 0145 in English. (Hunt, NC) 2125 on 11.945 in

French. (Wallace, NM) 15.260 at 1800 with African service in English to 1830, then French. (Balwierz, IL) 1827 with English to Africa. (Pastrick, PA) 17.820, 2130 English to Africa. (Linonis, PA)

CBC Northern Quebec Service 9.625 in English at 1116. (Neff, OH) 1630 in English on 11.720, into language. (Richards, MO)

CFRB Toronto, 6.070 at 0607 with Top 40. (Pastrick, PA)

Canary Islands Radio Exterior de Espana relay from Tenerife on 15.365 at 0020 in Spanish. Listeners letters at 0030. (Dementiuk, SC)

Chad Radiodiffusion Nationale Tchadienne, French sign on at 0500 on 4.905. (Shute, FL) Anthem, ID in French, music program from 0500. (Salmi, MA)

Chile Radio Nacional 15140 with Spanish and rock at 2250. (Abernathy, TX) Latin music 1814. (Johnson, NE) 1817. (Mayson, FL)

China Radio Beijing on 9.550 and 9.730 in English at 1300. (Wallace, NM) 15.520 at 0225-0231 when into apparent Chinese. (Abernathy, TX)

Clandestines Radio Camillo Cienfuegos, 0100 on 7.352 in Spanish. Wiped out at 0103 by WRNO. (Ligenfield, VA) A Voz del CID outlet. (Editor) 9.940 at 0023-0037 in Spanish, heard frequently. (Abernathy, TX)

Radio Monimbo, anti-Nicaraguan, 6.230 at 0200 sign on in Spanish. Regional news, emphasis on Nicaragua, and music. (Abernathy, TX)

Colombia La Voz de Cinaruco, 4.865 at 0930 with music program in Spanish. (Fravel, WV)

Radio Sutatenza, 5.095 at 0203 in Spanish with ID "Esta es Sutatenza, Bogota." (Abernathy, TX) 0715 with Latin music. (Johnson, NE) 0330 in Spanish. (Hawk, NE)

Ondas del Meta, 4.885 at 0413 relaxing Spanish songs. (Bergadano, NY)

Radio Super Medellin, 0835 Latin music with frequent IDs in Spanish. (Pastrick, PA)

Radiodifusora Nacional, 4.955 in Spanish to 0504 sign off. (Patton, TN)

Cook Islands Radio Cook Islands, 11.760 in English at 0700. (Wallace, NM)

Costa Rica Radio Impacto, 6.150 music and frequent "Impacto!" IDs, 0255-0330. (Abernathy, TX) 0300 with ID in Spanish. (Pastrick, PA)

Radio Reloj, 6.006 at 0808, Latin music. (Johnson, NE) 1149 news, ID, time and clock chime between each item. (Abernathy, TX) 4.832 in Spanish at 0607. (Patton, TN) 0810 easy listening music. (Pastrick, PA)

Radio Columbia 4.825 in Spanish with frequent "Radio Columbia" and "la gran cadena emisora Columbia" IDs. (Patton, TN)

Cuba Radio Havana, 6.095 at 0144 in English. (Neff, OH) 6.100 at 0319, national news in English. Announced 6.090, 6.100, 6.140, 9.740, and 11.725. (Abernathy, TX) 6.140 at 0400 also ID as the "Voice of Cuba." (credit misplaced) 15.300 at 1830 in Spanish. (Pastrick, PA)

4.765 Radiostansiya Rodina, Russian at 2235. (Mayson, FL) Usually relays the Mayak service. (Editor)

Cyprus BBC Relay, 7.210 at 0315 with "The World Today." (McDonough, PA)

Czechoslovakia Radio Prague English at 0100 and 0300 on 5.930, 7.345, and 11.990. (Wallace, NM) 7.345 at 0325 with music, weather. (Myers, MO) 0259 sign on with horn interval signal. (Abernathy, TX) 0105 news of Czechoslovakia. (Hunt, NC) 11.990, 0155 with "Music American Style," Spanish at 0200. (Hunt, NC) 0110 English to North America. (Pastrick, PA)

Denmark Radio Denmark, Danish with English sign on announcement at 2307 on 6.195. (Mayson, FL) 15.165 at 2057. (Ligenfield, VA)

East Germany Radio Berlin International 9.560 in English at 0215. (Wallace, NM) 0314 in English with sign off, gave extensive list of times and frequencies. (Abernathy, TX) 11.975 in English at 0150. (Hunt, NC)

Ecuador Emlsora Gran Colombia, Quito at 0200 in Spanish, ID by man, announcements, music. (Paszkiwicz, WI)

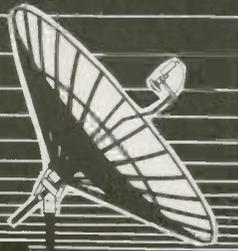
Radio Jesus del Gran Poder, Quito, 5.050 at 0955 with religious program in Spanish. (Dementiuk, SC)

La Voz del Triunfo, Santo Domingo de los Colorados at 0553 on 3.254 in Spanish, very strong. (Ligenfield, VA)

HD2IOA, time station, 7.600 in Spanish with time pips man with announcement at 0325. (Paszkiwicz, WI) 0133. (Abernathy, TX)

HCJB 9.745 at 0209 with DX Party Line. (Neff, OH) 0209 with "HCJB Hour." (Pastrick, PA) 15.155 at 0200

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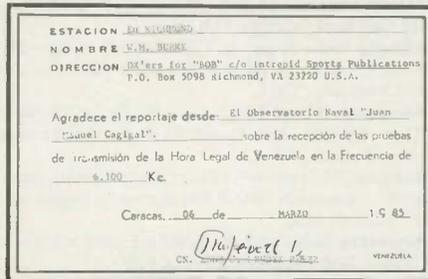
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Time station YVTO in Venezuela sends out this reply.

with call-in show. QRM from Havana on 9.745. (Balwierz, IL) 11.835 at 0325 in Russian to Europe. (McDonough, PA)

Egypt Radio Cairo 9.475 in English, discussing Islam. (Abernathy, TX) 0239 with English to North America. (Pastrick, PA) 9.675 at 0237 in English. (Salmi, MA) 9.805 in English at 2155 with travelogue, listener's letters. (Van Horn, FL) 2140 in English at 2140. (Johnson, NE)

England BBC on 9.590 with "Meridian" at 0157. QRM from Norway. (Shute, FL) 12.115 at 0210 in English. (Neff, OH) 1816 in English on 15.070 to Europe, Africa, Mideast. (Pastrick, PA)

French Guiana RFI relay at Montsinery English news at 0345 on 9.800 and 11.995. 0425 on 6.055 and 7.135. (Wallace, NM) 0319 with English news on 9.800. (Pastrick, PA) 11.670 in French at 1230. (Crowell, TN) 7.135 at 0420 English news. (Neff, OH)

Finland Radio Finland International on 15.400 in English at 1410. (Hawk, NE)

Gabon Africa Number One 15.200 at 1500 in English with ID and news headlines. (Wallace, NM) 15.475 at 2050 in English with announcements, disco music. Into French at 2100. (Paszkievicz, WI) 4.810 in French at 0500. (Patton, TN) 0510 with music, woman announcer. (Myers, MO) Excellent 0510 but off 0532-0538. (Griffith, CO)

RTG Libreville 7.270 in French with pop music program 0504-0524. (Fravel, WV)

Ghana GBC on 4.915 at 0607 in English with news-cast. (Patton, TN)

Greece Voice of Greece 9.420 at 0136 with national news in English. (Abernathy, TX) 0340 with English to North America. (Pastrick, PA) 0130-0145 with news in English. (Linonis, PA) 0200 with news. (Hawk, NE) 9.420 and 7.395 in English at 0340. (Wallace, NM) 7.395 at 0136 in English. (Neff, OH)

Guatemala Radio Maya de Barillas, 3.325 at 1052 in Indian language. Music, rooster crow, ID. (Paszkievicz, WI)

Radio Cultural, TGNC, 3.300 at 0230, announced parallel 5.055, in English. (Abernathy, TX) 0412 with Latin music. (Johnson, NE) 0300 with English religious program. (Hawk, NE)

Guyana CBS Georgetown, 5.950 at 0812 with English variety program, birthday, funeral and church announcements. (Fravel, WV) 0926, tentative. (Abernathy, TX) 0915 with many English IDs. (Dementiuk, SC)

Hawaii WWVH time signals on 10.000 at 1253, stronger than WWV. (Mayson, FL)

Honduras La Voz Evangelica, HRVC, 4.820 in Spanish with hymns and religious talk. (Hunt, NC) 0329-0400 with ID on the half hour, all Spanish. (Abernathy, TX)

Hungary Radio-Budapest 9.835 in English at 0123. (Neff, OH) 0215 with "Magazine 90." (Dementiuk, SC) 0205 in English to North America on this and 9.520. News and comment. (Pastrick, PA) 0100 with world

news. (Hunt, NC) 6.025, parallel 6.110, 9.835, and 12.00 (latter not heard) at 0206 in English. (Abernathy, TX)

Iceland [SBS on 9.860 at 1900 to Europe in Icelandic. (Ligenfield, VA) 13.797 at 1224 in Icelandic. (Salmi, MA)

India All India radio, 11.620 with music at 1855. (Hawk, NE) 2035 with Indian music. (Salmi, MA)

Indonesia Voice of Indonesia, 11.790 at 1300 in French. (Wallace, NM)

Iran Voice of the Islamic Republic of Iran 9.022 at 1930 sign on in English. Weak. (Hawk, NE) 15.084 at 2008 in apparent Farsi, prevalent jamming. (Johnson, NE) 1301 in Bengali, Farsi from 1314. (Fravel, WV)

Ireland Radio Dublin International 6.910 at 0452 with U.S. rock, DJ, ID 0500 in English. (Van Horn, FL)

Israel Voice of Israel 7.410 at 0110 to 0120 sign off. (Balwierz, IL) 0120 talk, ID, broadcast info. (Neff, OH) 0120 "Saturday Spotlight." (Hunt, NC) 9.435 at 0100 with national news in English. (Abernathy, TX) 2150 in seeming Russian. (Linonis, PA) 0105 in English. (Hunt, NC) 11.655 at 2320 in English. (Pastrick, PA) 12.025 at 1912 in English. (Johnson, NE)

Italy RAI 9.575 at 0100 English sign on to North America. (Linonis, PA) 0117 with easy listening music, IC 0119 and off. Parallel 11.800. (Abernathy, TX)

Japan Radio Japan on 9.505 at 1500 in English. (Wallace, NM) 17.755 at 0308 in English. (Abernathy, TX) 0120 in English but very poor. (Bergadano, NY) 17.825 English to North and South America at 0126. Poor. (Pastrick, PA) 0200 news in English. (Abernathy, TX)

JJY time station, 8.000 at 1141. (Abernathy, TX)

Kuwait Radio Kuwait, 15.505 at 1208 in Arabic with Arabic music, ID "huna al-Kuwait." Excellent. (Crowell, TN) 11.675 at 1830 with news in English. (McDonough, PA) 9.840 at 2205, Arabic music, IDs and announcements. (Van Horn, FL)

Lesotho Radio Lesotho, 4.800 at 0508, news in English to 0515, ID, then into local language. (Fravel, WV)

Liberia Voice of America relay on 17.800 at 1950 with "Sound of Soul" program. (Myers, MO)

Libya Radio Jamahiriya, 15.450 at 2225 with political commentary. (Abernathy, TX) Home service 15.235 and 15.415 in Arabic at 1500. (Wallace, NM) 7.245 in Arabic at 0055. (Hunt, NC)

Lithuania SSR Radio Vilnius 11.960 at 2201 with mailbag in English. (Fravel, WV)

Luxembourg Radio Luxembourg 6.090 with US pops, weather at 0008. (Bergadano, NY) 0049 ID, rock. (Neff, OH) U.S. pops at 0020. (Hunt, NC) Rock and pop at 2305. (Mayson, FL)

Madagascar Radio Netherlands relay on 21.685 at 1530 with world news and commentary, excellent signal. (Myers, MO)

Malta Radio Mediterranean on 6.110 at 2327 in English with music to 2329 sign off. Lots of QRM/QRN. (Pastrick, PA) Weak at 2230. (Dementiuk, SC)

Mauritania ORTM Nouakchott in presumed Arabic at 0637 on 4.845. No ID so tentative. Stringed instrument played every few minutes. (Dementiuk, SC)

Mexico XEQQ La Hora Exacta 9.555 in Spanish at 0515 with news and time pips. (Shute, FL) 0913 news, time pips, occasional ID of "La Hora Exacta." (Crowell, TN) 0313. (Paszkievicz, WI)

Radio Mexico International, 0330 on 17.765, parallel but weaker 15.430, in Spanish. (Abernathy, TX)

Monaco Trans World Radio at 0624 on 7.160 in English with "Revive Your Heart." (Salmi, MA)

Morocco RTM on 17.595 at 1554 in Arabic with music to 1600, man and woman announcers, more music. Fade by 1609. (Fravel, WV)

Namibia Radio Southwest Africa on 3.295, parallel 3.270 at 0116 with music, Afrikaans. (Shute, FL)

Netherlands Antilles Radio Netherlands Bonaire relay 6.165 and 9.590 on 0230 in English. (Wallace, NM) 0245 with "Media Network" on 6.165. (Balwierz, IL) 0200 with Happy Station. (Linonis, PA) 0140 on 6.020 in English. (Abernathy, TX) 9.650 in English at 1100. (McDonough, PA) 21.685 English to Africa at 1849. (Pastrick, PA)

Trans World Radio, Bonaire on 11.815 at 1300 in English with "The Worship Hour." (McDonough, PA) 1155 in English. (Abernathy, TX) 0140 with news, sports, music. (Neff, OH)

Netherlands Radio Netherlands 9.895 at 0130 in English with Happy Station. (Dementiuk, SC) 9.855 at 0155 in English. (Hunt, NC) 15.560 at 2316 in Portuguese to South America. (McDonough, PA)

New Zealand Radio New Zealand International,



This neat setup belongs to John Palumbo in Windber, Pennsylvania.

15.150 and 11.780 at 0350, English to the Pacific, soccer broadcast. (Pastrick, PA) 0500 in English on 15.150. (Wallace, NM) 15.485 with domestic service relay 0619. (Bergadano, NY) 17.705 with news at 0025. (Abernathy, TX)

Nicaragua Voice of Nicaragua 6.015 at 0400 in English. (Wallace, NM) 0440-0500 with anti-US comments. Very strong. (Linonis, PA) 0430. (Abernathy, TX)

Radio Sandino, 6.200 good at 0815 in Spanish, numerous "Viva Sandino's." (Dementiuk, SC) 0820 with Latin music. (Johnson, NE)

Radio Zinica, 6.120 at 1230 in Spanish. (Abernathy, TX)

North Korea Radio Pyongyang, 9.977 at 1135 in English. Sharp, fast fades. (Crowell, TN) 1140 music and political monologue in English. (Johnson, NE) 1200 in English. (Hawk, NE) 9.977 and parallel 9.745 at 1114 in English. (Dementiuk, SC) 1220 commentary, ID. (Abernathy, TX)

Norway Radio Norway International 9.590 at 0157 under BBC. (Shute, FL) Sunday English at 2200 on 15.180. (Bergadano, NY) 15.230 at 1011, pop music, ID 1015. (Fravel, WV) 15.265 at 2007 with news in English. (McDonough, PA) 2015 with talk. (Hunt, NC)

Pakistan Radio Pakistan on 15.595 at 1102 with slow speed news in English. (Fravel, WV) 17.662 at 1602 with slow English, barely audible. (Mayson, FL) 17.810 in English at 1708, pretty good signal. (Bergadano, NY)

Peru Radio Omega, Lima, 6.185 at 0802, man announcer, several mentions of "Omega," light Latin pops, weak and very noisy. (Crowell, TN)

Radio America, Lima, 6.010 at 0743 with ID, Spanish pop music. (Shute, FL)

Philippines VOA Poro/Tinang relay on 15.425 at 1225 in English with "Focus" program. (Johnson, NE)

Poland Radio Polonia—15.120 at 0235 news and commentary in English. (Johnson, NE) 7.145 at 0230 in English. (Salmi, MA) 9.525 in English at 0315. (Wallace, NM)

Romania Radio Bucharest on 11.810 at 0212 English to North America. (Pastrick, PA) 11.810 and 11.940 at 0400 in English. (Wallace, NM) 0200 on 9.570 in English with news. (Hawk, NE)

Rwanda Deutsche Welle relay on 7.225 at 0440 in African service in English. (Abernathy, TX) Sign on at 0430 but with ham QRM. (Griffith, CO)

Saudi Arabia Broadcasting Service of the Kingdom of Saudi Arabia 15.060 at 1800, talk and music in possible Bambara. (McDonough, PA) 1249-1255 in Arabic. (Fravel, WV)

Senegal ORTS Dakar, 4.890 at 0700 in French. ID 0709. (Dementiuk, SC)

Sierra Leone SLBS tentative on 5.980 with African choral music at 0505 with Voice of Free China silent. (Shute, FL)

Solomon Islands SIBC Radio Happy Isles on 5.020 at 0813, English news and commentary. (Johnson, NE) 9.545 at 0700 news. (Hawk, NE)

South Africa Radio RSA 6.010 at 0213 with commentary in English. (Abernathy, TX) 0158 with interval signal, sign on in English, news. (Van Horn, FL) 7.270 at 0445 in French. (Wallace, NM) 9.615 at 0215 with "Economic Review." (Pastrick, PA)

Spain Spanish Foreign Radio 9.630 and 11.880 in English at 0000. (Wallace, NM) 5.980 with English news 0505, parallel 6.125. (Shute, FL) 9.630 at 0110 in English. (Balwierz, IL) 0216 in Spanish, ID 0219. (Abernathy, TX) 0109 in English. (Neff, OH) 0030 in English

with "Panorama" program. (Linonis, PA) 11.880 at 0140. (Hunt, NC)

Sweden Radio Sweden International in English with Listener's Mailbag 0240. (Shute, FL) 0230 sign on announcements in several languages, then news in English. (Abernathy, TX) 11.705 at 0330 in English. (Balwierz, IL) 0231 news and weather. (Pastrick, PA) 1400 on 15.345 in English. (Wallace, NM)

Switzerland Swiss Radio International, Swiss music at 0350 on 6.135. (Balwierz, IL) 0413 in English with "Grapevine." (Neff, OH) 0207 with "Dateline." (Pastrick, PA) 9.885 at 0221, parallel 6.135, 9.725, 12.035 (latter not heard), all English. (Abernathy, TX) 12.035 at 0145 with "Sunday Supplement" to North America. (Linonis, PA) 0200 with world news. (Hunt, NC) 0400 in English. (Wallace, NM)

Syria Syrian Arab Republic broadcasting Service, 12.085 in French at 1936, frequent IDs as "L'ecoute Radio Damas." (Shute, FL) English at 2130, ID as "Radio Damascus." (Dementiuk, SC) 2030 with music in English. (McDonough, PA) 2015 in English, interviews, Middle Eastern music, time checks, U.S. rock. (Shute, FL) 17.825 at 2020 with music and news in English. (Johnson, NE)

Tahiti Radio Tahiti, 15.170 in French at 1730, good signal, talks and pop music. (Shute, FL) 0300-0600 in Tahitian with beautiful Polynesian music. (Linonis, PA) 0435, and at 0632 with what seemed a call in program. (Johnson, NE) 11.825 0535 island music, French. Weaker on 15.170. (Griffith, CO) 0530 in Tahitian with island music. (Salmi, MA) 0411, 15.170 and 11.825. (Wallace, NM)

Taiwan Voice of Free China, via WYFR, 5.985 at 0224 in English. (Pastrick, PA) 0215 with "Spotlight" program. (Linonis, PA) 0244 with music, ID 0248, ID 0248, Chinese lesson. (Abernathy, TX)

Togo RTT on 5.047 in French at 0526, chime IS, anthem and sign on with ID "Ici Lome," hymn, prayers, program features. (Van Horn, FL)

Turkey Voice of Turkey 9.560 at 2215 with English to North America. (Van Horn, TX) 0255-0300 sign on in English. QRM from Radio Berlin International. (Abernathy, TX) 0303 English to North America. (Pastrick, PA)

Tunisia RTT on 11.730 with Arabic music 2124, wiped out by Netherlands Flevo transmitter at 2127. (Crowell, TN)

Ukraine SSR Radio Kiev, 9.820 at 0200 in English with news, commentary (Pastrick, PA) 11.720 at 0215 with "Ukraine Today." (Abernathy, TX)

United Arab Emirates UAE Radio, Dubai, on 17.775 at 1840 in Arabic with music. (McDonough, PA) 1900 in Arabic. (Ligenfield, VA)

United States Radio Marti, 11.815 at 1500 in Spanish: "Buenos Dias Cuba, Esta es Radio Marti." (Richards, MO) 11.930 at 2100. (McDonough, PA) 9.660 at 2338, QRM from Radio Rumbos, Venezuela. (Abernathy, TX) 0210 excellent. (Griffith, CO) 6.075 at 1140 ID, news. (Neff, OH)

Voice of America, feeder 5.745 in English at 0254. (Neff, OH) 14.398 LSB in English at 1635. (Pastrick, PA)

Armed Forces Radio TV Service, 17.765 at 1843 English to Asia and Africa. (Pastrick, PA)

United Nations Radio, 15.125 (not 15.120? editor) with news at 1900, badly QRM'd. (Myers, MO) 10.869 USB feeder with English sign on 0200, info French to 0215, English to 0230, then Swahili and Somali. (Griffith, CO)

WYFR 11.830 at 1800 in English with religion. (Pastrick, PA)

WINB 15.145 at 0308 English to South America. (Pastrick, PA)

KCBI, Dallas 11.790 at 1857 with "Eyes of Texas" IS, equipment test ID, address, music and slogan "the international sound of Texas." (Paszkievicz, WI) 2035 with tests. (Salmi, MA) 2050 testing. (Balwierz, IL) 1750 country, gospel music, test announcements, (Neff, OH) Easy listening music during 2015 tests. (Crowell, TN) Radio Earth via KCBI at 1800 in English with broadcast made at ANARC convention. (Paszkievicz, WI)

KGEI 11.715 at 0336, possible Russian. (McDonough, PA) 0500 in Russian. (Wallace, NM)

WRNO at 1700 frequency change from 11.965 to 15.420. (Richards, MO) 15.420 at 1931 and "Power for Living" program. (McDonough, PA) 1830 with rock, news 1833. (Pastrick, PA) 6.185 Top 40 from 0300. (Linonis, PA)

WMLK Bethel, PA 15.110 around 1900, scripture passages with ID and address etc. every 2-4 minutes.

Poor due to QRM. (Richards, MO) 1830 with tests to Europe and Mideast. (Hawk, NE) 1843 tests, fair but fade. (Myers, MO) 1700 ID every three minutes. (Dementiuk, SC)

USSR Radio Moscow, 11.840 (via Havana) 1800-1920 news, commentary in English. (Abernathy, TX) 1802 in English. (Pastrick, PA) 13.655, 13.680, 13705 at 1224 in World Service. (Fravel, WV)

Radio Peace and Progress 11.980 with IS at 0000, into Spanish. (Myers, MO)

Vatican Vatican Radio 9.605 at 0055 with commentary. (Myers, MO) 0050 with "Newsdesk" at 0107. (McDonough, PA) 9.645 at 0500 in English. (Wallace, NM) 11.845 at 0050-0110 with "Church Today" program, parallel 6.015 (QRM from Nicaragua) and 9.605 (poor). (Abernathy, TX)

Venezuela Radio Mar, Maracaibo, 3.275 good at 0152 with ID, music in Spanish. (Shute, FL)

Radio Rumbos, 4.970 at 0429, lively music, all Spanish. (McDonough, PA) 9.660 at 2012 in Spanish, ads, music doorbell sounds during frequent newscasts. (Abernathy, TX)

Ecos del Torbes, 4.980 at 0915 with Latin music. (Johnson, NE)

Radio Capital 4.850 at 0816 in Spanish, talk and music. (Pastrick, PA)

Vietnam Voice of Vietnam on 15.010 at 1224 with Asian music. Poor with deep, erratic fades. (Crowell, TN)

West Germany Sudwestfunk, Baden Baden, 7.265 in German with American and European pop music. ID mentions Baden Baden. (Shute, FL)

Yemen Arab Republic Radio San'a on 9.780 at 0312 with chanting and Arabic announcements. (Crowell, TN)

Yugoslavia Radio Yugoslavia 9.620 at 2300 sign on in Spanish with orchestral IS. (Abernathy, TX) 2115 sign on in English with news, sports, weather. (Van Horn, FL) 15.240 at 1428 to 1454 sign off, English variety program. (Fravel, WV) 15.410 at 1300 in English. (Dementiuk, SC)

Many thanks to: Sheryl Paszkiewicz, Manitowoc, WI; Chris Hawk, Omaha, NE; John Mayson, Tampa, FL; Paul Balwierz, Burbank, IL; David Clay Patton, Signal Mountain, TN; Larry R. Fravel, Clarksburg, WV; Richard D. Richards, Independence, MO; Pat McDonough, Pittsburgh, PA; Marty Myers, Kansas City, MO; David E. Salmi, Maynard, MA; Miles Abernathy, Austin, TX; Patrick M. Griffith, Denver, CO; Michelle Shute, Pensacola, FL; George Neff, Niles, OH; Andrew Crowell, Nashville, TN; Roman Dementiuk, Charleston, SC; Jack Linonis, West Middlesex, PA; Robert Pastrick, Conway, PA; Billy Hunt, Durham, NC; Bill Bergadano, Staten Island, NY; Darrell Ligenfield III, Woodbridge, VA; Steven Johnson, Omaha, NE; Robert E. Wallace, Albuquerque, NM; and Gayle Van Horn, Orange Park, FL.

Till next month, good listening!

PC

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COMMUNICATIONS FOR SURVIVAL

Solar Power

Any natural devastation or military disaster is bound to knock out commercial power systems. Power outages are also commonplace, in certain parts of the country, without any disaster occurring at all. Survivalists attempting any training or rural bivouac should also plan to do without commercial power systems.

Alternative voltage sources to keep your communications equipment running would be a bank of dry cell batteries, but this is an expensive proposition, and dry cells cannot be effectively recharged when they wear down.

Other alternatives would be using portable generators, but these systems require a fuel supply, and they might also be too noisy for survival surveillance operations. Generators are also "over-kill" because most modern radio communications equipment is fully transistorized and only requires minimal amounts of power.

Generators driven by the wind or by streams and even by bicycles are another alternative to keeping a system on the air, and if ample amounts of wind or water power are available at your selected survival area, this might be a workable alternative.

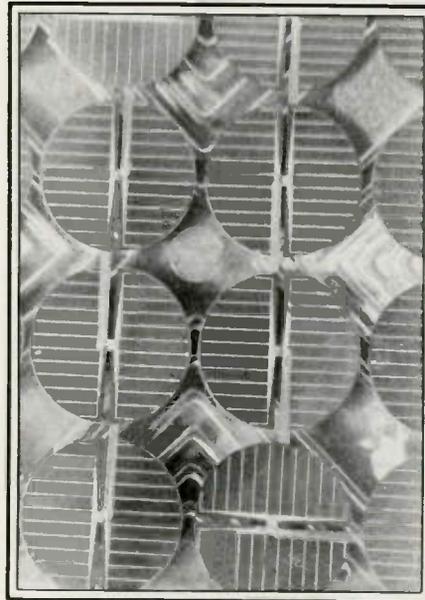
However, if you're looking for the most modern way to stay on the air, your best bet will probably come from the sun as a source of solar energy. This solar energy, coupled into a motorcycle-sized storage battery, and a small set of solar charging cells, may be all you need to stay on the air indefinitely. A larger bank of solar cells hooked into an automobile storage battery will not only give you communications power, but will also serve emergency lighting needs plus the power requirements of allied survival equipment that work from a 12-volt battery source.

Solar Systems

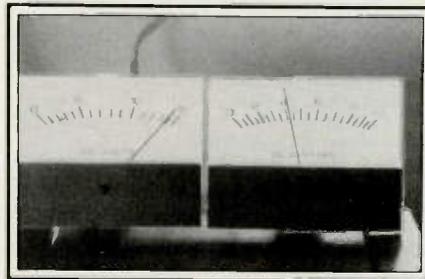
The technical name for a solar system is the word "photovoltaic." We will simply abbreviate this big, long word by referring to our photovoltaic system as a PV system.

A 12-volt photovoltaic system is made up of individual PV silicon cells through a complex and relatively expensive manufacturing process. Lucky for us, silicon is the second-most abundant raw material on our earth (carbon is the first) so manufacturers have an almost inexhaustible supply of materials with which to develop their silicon cells.

The silicon cells are manufactured similar to producing a modern transistor, which includes crystal growth, wafer sawing, wet



Details of a photovoltaic cell.



Metering is important in emergency electric power supplies.

chemistry, junction formation, and metal screening. This will give us a solid-state junction, which is formed by the creation of two different regions within a semiconductor material that have been carefully doped to produce the desired electrical properties of a solar charging cell. Boron and phosphorus, impurity materials, are added to the silicon to create this desired electrical property. Technically speaking, phosphorus-doped silicon forms n-type material—a donor of negatively charged electrons. The boron-doped silicon will form a p-type material that will accept these electrons. We interface the two dissimilar regions with a junction that will allow electrons to move in a preferred direction across the junction.

When sunlight strikes the PV cell surface, electrons are freed from their atoms by small bundles of light energy called photons. A charge develops across the junction, devel-

oping dissimilar charges on the front and back of the surfaces. If we now place electrical conductors with these surfaces, we can develop an electromotive force across the cell. Voila, we have now created voltage. A single cell, reacting to sunlight (no load), will typically develop .55 volts. The output current of this cell is directly proportional to its surface area and the amount of sunlight illuminating the cell.

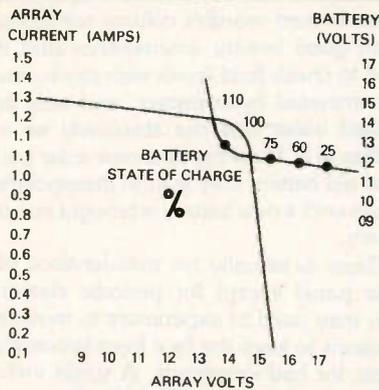
Of course, there are an additional myriad of steps in developing individual solar cells—such as developing a texturing technique that allows light reflected obliquely from the side of one part of a cell to strike another peak of a cell where it has a second opportunity for transmission through the surface. This is what gives us the front surface of a textured cell appearing black.

Just take my word for it, producing the intricate solar cell is expensive. However, manufacturers of solar cells are continuing to find better ways to make the cell and improvements in cell manufacturing techniques to reduce costs. Five years ago, you would spend approximately \$100 for every watt of power developed by a solar panel. The cost is now down to about \$13 per watt, and in ten years, a breakthrough in cell production could bring the cost down to \$1 per watt. However, \$13 a watt seems fairly stable, and I wouldn't hold off in trying out a solar panel because the \$1 per watt cost is still many years off.

Solar Panels

These 1/2-volt cells are connected in series to develop an open circuit voltage of approximately 18.6 volts DC. The physical size of the panel of individual connected cells will determine its ultimate charging capability of a 12-volt battery. Typically, a 1' x 1' panel may develop 1/2 amp of 12-volt charging capability at noon. Combine two of these and you have slightly over 1 amp of charging capability for your 12-volt system. More about this in just a moment, but let's look at the individual panel for marine and recreational vehicle use.

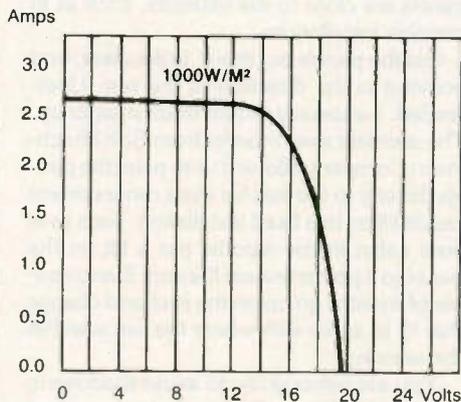
Environmental protection to these delicate solar cells is extremely important in the rugged marine and mobile industry. The best protection is afforded by glass encapsulation on both the front and back of the entire solar panel module. A glass front and plastic back may not be desirable in the wet marine environment. This type of panel may quickly develop corrosion within the cells and may become contaminated and



Self-regulation occurs because the current from the array decreases as the array voltage increases. As the state of charge of the battery increases the terminal voltage increases. The sudden rise in battery voltage at full charge is what the array needs to "see" to shut down the current.

Performance Characteristics

The IV curve (current vs. voltage) below demonstrates typical M73 power response to light at 25°C cell temperature.



ARCO Solar, Inc.

Subsidiary of AtlanticRichfield Company

just about useless after a year at sea or on the top of your motorhome. In selecting a solar panel for the maximum amount of moisture and dirt protection, all-glass encapsulation may be slightly more expensive, but ultimately is the best way to go.

Power Ratings

A 14" x 14" square panel consisting of 32 three inch cells, completely encapsulated in polymer and Borosilicate glass is rated at 17 watts at 18.6 volts DC, and under typical 12-volt battery conditions will develop 1.23

amps on a bright, sunny day. The typical cost of this submersible, marine-rated solar power system is about \$199. Yes, you can buy the same amount of power capability for about \$50 less, but these panels may not be appropriate for rugged mobile and mobile marine use. (Less expensive panels might fair well inside an environmentally protected greenhouse.)

If you just want to trickle charge your 12-volt battery system when you are away from your camper, cabin, or boat, an 8½ watt solar panel array will give you well over ½ amp of charging current throughout most of the day and will cost under \$100.

For those of you who may wish to actively use your 12-volt system as you are camping out on plying the back roads, simply hook up in parallel two 17-watt arrays and watch your ampmeter hover around 3 amps in mid-morning, noon, and mid-afternoon sunshine at a cost under \$400—completely sealed in glass to protect it from the elements. If you find you need even more power, simply add another panel in parallel to it and watch the ampmeter go higher and higher. Two identical modules interconnected in parallel provide twice the current output of a single module, with a nominal voltage unchanged.

Natural Overcharge Protection

Now you are probably wondering what's going to happen when your 12-volt batteries have received all the current they wish and you want to make darn sure that the batteries don't get overcharged. The terminal voltage will increase, and a secondary reaction on the battery plates will result in liberation of gases. Incidentally, these gases are harmful, if not fatal, so always keep your batteries in a well-ventilated area and away from the occupants on your boat or motorhome.

When the battery begins to emit gases in a fully charged state, the gradual increase in terminal voltage from the solar cell suddenly rises. This sudden rise of voltage at a fully charged state will cause the current from the array to decrease. This shut-off occurs at the fully charged condition providing that the proper total number of photovoltaic cells is used in series in the array and that the "knee region" of the voltage current curve of the array is sharply defined.

To test this natural shut-off protection myself, I brought in several solar panels from Bob Hutchinson, WD5EQM, 1716 Woodhead Street, Houston, Texas 77019, a solar panel expert and a well-known survival radio power station authority. His glass encapsulated panels along with stainless steel maritime mobile mounting hardware were the highest quality I have ever seen—you could even walk on them if you plan to use them as hatch covers.

I hooked them up to two relatively new, deep-cycle, 100-amp, marine batteries that I use aboard a boat to power my HF emergency radio station plus auxiliary lighting. For the first week, my 35-watt array (which cost just under \$500 including the stainless steel mounts) developed a steady 4 amps of charge during the daylight. At the end of the fourth day, the battery voltage began to approach 13 volts, and the array kicked back to 2 amps during the bright daylight. The next day, the battery voltage began to rise quickly, indicating they were charged, and the charging current dipped below 1 amp.

As I would talk on single sideband, I would watch the solar array respond with more current during each voice peak. My new sun-powered charging system indeed develops its own voltage regulation. Of course, I would always recommend a shut-off switch in case you plan to not use your battery system for an extended length of time and would rather manually control the amount of regulation you would like to see. How simple; on a long outing, simply switch the panel in and out depending on the state of your battery, the amount of sunlight, and how much time you have been using your 12-volt electronics.

Solar panel systems also require a blocking diode, usually silicon, to keep the battery voltage from flowing backwards at night and discharging through your solar array. Better arrays include this diode as well as the proper number of cells in series to make up for the 0.75 volt drop (¾ volt) that most silicon diodes exhibit. Recent radio articles have recommended the use of a Schottky diode in series with a positive lead, mainly because the Schottky diode has only a 0.2 volt drop. However, Schottky diodes were found to experience a high failure rate and reverse current leakage was found to be unacceptable. Stick with a germanium diode. You can add additional diodes in series so that your array will "see" the proper battery terminal voltage to shut down the array current. This is usually not necessary except for a short wire run to a small battery charged by a large array.

For additional information on solar power systems, contact the following companies:

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21011 Warner Center Lane
P.O. Box 4400
Woodland Hills, CA 91364

Atlantic Solar Power
6255 Washington Blvd.
Baltimore, MD 21227

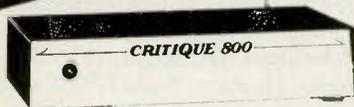
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Kycocera International, Inc.**
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CIRCLE 40 ON READER SERVICE CARD

Mounting Considerations

If you use No. 10 or 12 wire, you can run your panels up to 40 feet away from your batteries. You can use smaller wire if your panels are close to the batteries, such as in portable installations.

Get the panels out there, in the clear, and pointing in the direction of the sun. Unattended, we usually mount them straight up. The stainless steel mounts from Bob Hutchinson Company allowed us to point the panels directly to the sun for even more current capabilities. In a fixed installation, such as at your cabin in the woods, put a tilt on the panel so it points toward the sun. Every couple of months go up on the roof and change that tilt to agree with where the sun is within the season.

You are never going to avoid shadows in most "hidden" installations, but try your best to put them in an area where shadows won't completely cover the panel. Solar cells like to see a lot of sunshine, and an errant shadow on just a couple of cells will dramatically decrease the charging current output—and I mean dramatically!

Again I emphasize the importance of a completely glass-sealed solar cell set-up for portable installations; I have tried others, and in less than a year, you can watch the cells slowly deteriorating because somehow moisture seems to creep in. After a year with the glass cells, which have actually been submerged for test purposes, there is no sign of decay.

Start your cells out on relatively new batteries. In next month's column we will talk about good battery maintenance and the need to check fluid levels with sterile, non-contaminated hydrometers, and only add distilled water that has absolutely no impurities in it. Hooking up a new solar panel to an old battery may lead to disappointing results until a new battery is brought into the system.

There is virtually no maintenance of a solar panel except for periodic cleaning. You may need to experiment in mounting locations to keep the face from becoming a target for bird droppings. A single vulture dropping may cost you 2/10th of an amp in charging. A hawk could just about take you off the air! Simply clean off the mess with a wet cloth, and you are back in business.

Staying on the air with photo cells is a workable solution when commercial power lines may fail. A small, 2-pound "gel-cell" is small enough to fit in your backpack, and a 12-volt solar panel to charge this cell adequately would be hardly larger than a dinner plate that can fit into your backpack. Solar cells are quite thin and can be compacted easily for storage. They are then opened up and hooked in parallel for additional charging current.

With the uncertainty of power line voltage feeds during natural or civil disorders, you should immediately look into the benefits of solar cells and rechargeable batteries and begin testing this system for your particular operation.

PC

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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

One of the most fascinating things about monitoring utility stations communications, whether they be by voice, Morse code or radioteletypewriter, is unraveling the mysteries that seem to abound on a daily basis within the HF radio spectrum.

Utility buffs are known to spend months, *even years*, trying to find what agencies lurk behind unofficially-assigned callsigns, trying to decode messages containing groups of five letters or five digits, or trying to determine who is using unorthodox methods of keeping communications secrets from all of us eavesdroppers.

Robert Burton, when he wrote *The Anatomy of Melancholy* in 1621, described such curiosity as "an itching humor or a kind of longing to see that which is not to be seen, to do that which ought not to be done, to know that secret which should not be known, to eat of the forbidden fruit."

But what a personal satisfaction we "ute" monitors get when we are able to uncloak that which was meant to be hidden. It's not as if we are trying to strip Batman of his cowl. We just want a better understanding of what goes on around us. That's what makes this hobby so interesting.

Such secretiveness is regularly found among agencies using the RTTY medium. Last month it was disclosed in this column how it was discovered that the "RUES" callsign was being used by the U.S. State Department.

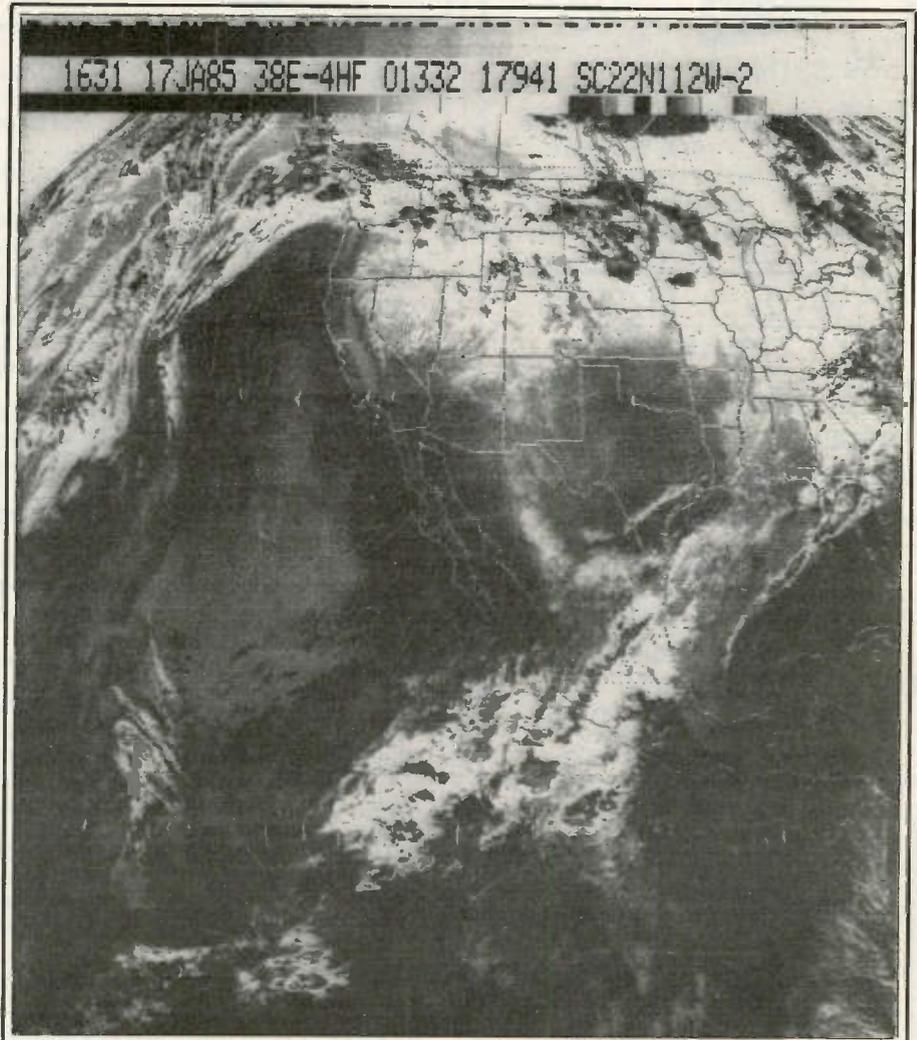
But for every mystery that is solved, there are scores more that remain unsolved. If you have solved any of these little mysteries of an RTTY monitor's life, please share your solutions with your fellow readers.

While writing this column, this writer found another one of those mysterious callsigns at 0457 GMT on 6988.6 kHz embedded within a Frequency Division Multiplexed transmission of RYs and foxes. The callsign was "FQMA" and the RTTY setting was 85/66N. Any reader know which U.S. military service uses that callsign?

Fred Hetherington of Ormond Beach, Florida, a generous contributor of loggings to this column, has mysteries of his own. He has found "RUBWOP" on 10363 kHz and believes it to be a U.S. station, possibly KGA64, but wants verification. Other puzzlers of his: "RFAWCCP," "RFAWPHH," and "RFBWP." Fred says he knows they're used by the French military but asks what units use which call letters. Lastly, he has found "JIIGDLL" on numerous frequencies, including 9337, 9344, 13125, 15860, 16109, and 16226.6, but can't attach an ID to the sender.

Encryption Interest?

It seems that an encryption system that has been in use for the past nine years, most-



FAX weather map with view from GOES WEST satellite. (Submitted by Juan Rivera)

ly by military and government agencies that could afford its cost caused by the system's mathematical complexity, may soon become available at a very low cost and as standard equipment on many microcomputers.

That mathematical complexity makes use of the system, called Public Key Encryption, time consuming and hence it becomes expensive.

A British firm has devised a computer microchip that could operate PKE, which already may be used in encrypting RTTY messages, at a very fast speed rate and lower its cost to \$100 for the chip, according to an article in *The Economist*, a British weekly newsmagazine.

PKE, developed at Massachusetts Institute of Technology, gives each user of the system two keys to work with for coding and decoding. One key is used to encrypt data, the other to "authenticate" the message.

If you wanted to send me a secret message, you would look up my "public key" in

a directory and would use that key to encrypt the message. When I receive your message, I would use my "private key" to decode it. Now I "authenticate" the message and send it encrypted to you using my private key. You then would use my public key to decode the authentication. If either one of us receives gibberish, it would be known that a wrong private key is being used.

Mathematical complexity comes into play utilizing prime numbers and factorization in determining the pairs of keys used. But this system is far better than the popular data encryption standard that was developed by International Business Machines and is being administered by the National Bureau of Standards. That system creates the need for 499,950 secret keys to serve 1,000 users, compared with 2,000 keys per 1,000 users with PKE.

So, as you can see, keeping RTTY messages secret from viewers such as you and I is highly complex and costly. Sadly, most of

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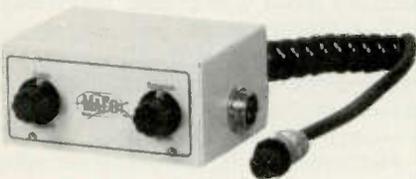
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Time	Call	Frequencies	Coverage
0018	NIK	5320, 8502	Iceberg bulletin, North Atlantic.
0038	CFH	122.5, 4271, 6330	Coded synoptic land stations observations, Northwest Atlantic.
0100	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, each and south coasts of Newfoundland, Gulf of St. Lawrence and Nova Scotia.
0140	CFH	122.5, 4271, 6330	Coded synoptic land stations observations, Northwest Atlantic.
0200	NMF	8490, 13020, 16968.8	Warnings and forecasts, North Atlantic.
0220	VCS	4353	Forecasts for the waters around Nova Scotia and the Grand Banks. Synopsis for the North Atlantic.
0225	CFH	122.5, 4271, 6330	Coded synoptic ships observations, Northwest Atlantic.
0333	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, North Atlantic.
0500	WBR	4061.5, 8140, 13624, 18675	Coded surface analysis for USA, southern Canada and coastal areas of the Atlantic.
0515	WBR	4061.5, 8140, 13624, 18675	36-hour forecast for the Eastern Caribbean.
0630	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, east and south coasts of Newfoundland, Gulf of St. Lawrence and Nova Scotia.
0630	CFH	122.5, 4271, 6330	Coded synoptic land stations observations, Northwest Atlantic.
0630	WBR	4061.5, 8140, 13624, 18675	Tropical surface analysis and discussion for the equator to 30 degrees north, 50 degrees west to 110
0740	CFH	122.5, 4271, 6330	Coded synoptic ships observations, Northwest Atlantic.
0740	CFH	122.5, 4271, 6330	Coded synoptic land stations observations, Northwest Atlantic.
0845	WBR	4061.5, 8140, 13624, 18675	Coded 48-hour surface prognosis for 20 degrees north to 60 degrees north, 50 degrees west to 145 degrees
0848	CFH	122.5, 4271, 6330	Coded synoptic ships observations, Northwest Atlantic.
0949	CFH	122.5, 4271, 6330	Coded synoptic ships observations, Northwest Atlantic.
1100	WBR	4061.5, 8140, 13624, 18675	Coded surface analysis for USA, southern California and coastal areas of the Atlantic.
1130	WLO	4352, 8707, 13083.5	Warnings and forecasts, southwest North Atlantic, Caribbean Sea, Gulf of Mexico
1200	CFH	122.5, 6330, 9890, 13540	Coded synoptic land stations observations, Northwest Atlantic.
1218	NIK	8502, 12750	Iceberg bulletin, North Atlantic.
1230	VCS	8716.5	Forecasts for the waters around Nova Scotia and the Grand Banks. Synopsis for the North Atlantic.
1233	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, North Atlantic.
1340	CFH	122.5, 6330, 9890, 13540	Coded synoptic land stations observations, Northwest Atlantic.

Table 1: 24-Hour Guide to RTTY Weather Broadcasts in the United States and Canada.

our RTTY monitorings are encrypted. Luckily there's still enough that's unencrypted to hold our attention.

Special Feature

This month's special feature is a 24-hour guide to RTTY weather broadcasts in the United States and Canada (Table 1).

A ribbon of RTTY tape (or should it be 21 turns of a FAX machine drum?) goes this month to Juan Rivera, WA6HTP, of Walnut Creek, California, for sending this column a FAX weather map of the United States as seen from the GOES-WEST satellite (see photo). Juan also sent facsimile weather charts issued from Moscow and Japan. But the Russian machine malfunctioned and the chart appeared blurry, and the Japanese chart was so heavy with isobar lines that it was hard to see the Japanese coast line through them.

Juan uses a self-modified Qwip-1200 of-fice FAX machine connected to his HF re-

ceiver. He says he has logged weather charts for about 14 countries.

Hope this doesn't affect maritime RTTY communications: Two maritime communications satellites are scheduled to be launched from the Space Shuttle on International Maritime Satellite Organization spacecraft. Launches are to be in July 1988 and mid-1989. Forty-three countries, including the U.S., are members of INMARSAT.

Loggings

Before beginning this month's set of loggings, I would like to wish all of you Merry Christmas and Happy New Year and to thank you for the support you've given me in setting a course for this column.

Turning on our RTTY machine, we find: **2291.5:** IDQ2, Rome Naval Radio, Italy, with traffic, 850/66R, at 0255. (Fred B. Hetherington, Ormond Beach, FL) **4203.3:** 74KBD, Unidentified unit of the Spanish Navy, calling 72JKL, Madrid Naval

Time	Call	Frequencies	Coverage
1400	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, east and south coasts of Newfoundland, Gulf of St. Lawrence and Nova Scotia.
1425	CFH	122.5, 6330, 9890, 13540	Coded synoptic ships observations, Northwest Atlantic.
1630	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, North Atlantic. Not used on second Thursday of each month.
1700	NMF	8490, 13020, 16968.8	Warnings and forecasts, North Atlantic.
1700	WBR	4061.5, 8140, 13624, 18675	Coded surface analysis for USA, southern Canada and coastal areas of the Atlantic.
1715	WBR	4061.5, 8140, 13624, 18675	36-hour forecasts for the Eastern Caribbean.
1730	WLO	4352, 8707, 13083.5	Warnings and forecasts, southwest North Atlantic, Caribbean Sea, Gulf of Mexico
1830	CFH	122.5, 6330, 9890, 13540	Coded synoptic land stations observations, Northwest Atlantic.
1830	WBR	4061.5, 8140, 13624, 18675	Tropical surface analysis and discussion for the equator to 30 degrees north, 50 degrees west to 110
1922	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, east and south coasts of Newfoundland, Gulf of St. Lawrence and Nova Scotia.
1940	CFH	122.5, 6330, 9890, 13540	Coded synoptic ships observations, Northwest Atlantic.
1940	CFH	122.5, 6330, 9890, 13540	Coded synoptic land stations observations, Northwest Atlantic.
2035	CFH	122.5, 6330, 9890, 13540	Coded synoptic ships observations, Northwest Atlantic.
2100	VCS	8716.5	Forecasts for the waters around Nova Scotia and the Grand Banks. Synopsis for the North Atlantic.
2149	CFH	122.5, 6330, 9890, 13540	Coded synoptic ships observations, Northwest Atlantic.
2300	WBR	4061.5, 8140, 13624, 18675	Surface analysis for the USA, southern Canada and Coastal areas of the Atlantic.
2330	WLO	4352, 8707, 13083.5	Warnings and forecasts, southwest North Atlantic, Caribbean Sea, Gulf of Mexico
2340	CFH	122.5, 4271, 6330, 9890	Warnings and forecasts, North Atlantic.

Station

CFH = Canadian Forces, Halifax, NS, Canada
 NIK = U.S. Navy, Boston, MA
 NMF = U.S. Coast Guard, Boston, MA
 VCS = Canadian Coast Guard, Halifax, NS, Canada
 WBR = Miami Meteo, FL
 WLO = Mobile Radio, AL

RTTY Setting

850/100N
 FEC
 FEC
 FEC
 850/100N
 FEC

Radio, Spain, 850/100N, at 0130. (Hetherington, FL)

4354: KLC, Galveston Radio, TX, FEC weather and traffic list at 0100. (Hetherington, FL)

5320: NIK, U.S. Navy station, Boston, MA, with a weather broadcast and iceberg locations at 0018, FEC. (Darrell Lingenfield III, Woodbridge, VA)

6502: TBB6, a new Turkish telex station, spotted at 0000 with a message via ARQ. (Hetherington, FL)

7586.5: 6VY41/6VU73/79, Dakar Aeradio, Senegal, running 425/50R at 0047. (Tom Kneitel, NY)

7693.3: 3BT3: Vacoas Meteo, Mauritius, sending RYs followed by weather reports, 850/66R, at 1230. (Hetherington, FL)

9070: 6VU, ASECNA, Dakar, Senegal, with an RYs test tape, 850/66N at 2322. (Lingenfield, VA)

9155: "GVAC," location not determined, sending RYs at 2228, 850/66N. (Lingenfield, VA)

10232: VOA, Greenville, NC, at 0000 with English news broadcast about the state department being transmitted to the Near East. This was an FDM transmission, 85/100R. (Dallas Williams, Sedgwick, CO)

12407: PCQE, Pacific Express, a South Korean container ship, at 1505, sending a telex to PCH, Scheveningen Radio, Netherlands via ARQ. (Editor's logging)

12500.5: MB 0118, a Russian tug, sending 5-digit-grouped coded messages to Murmansk Radio, USSR, 170/66N at 2140. (Editor's logging)

12501: LAGS, Viva, a Norwegian bulk carrier, sending cables in English to LGB, Rogaland Radio, Norway, ARQ, at 1832. (Editor's logging)

12509: Azerbaijan, a Russian roll-on/roll-off passenger ferry, with telegrams to Odesa Radio, USSR at 2150, ARQ. At 2226, its sister ship, Kazakhstan, was sending telegrams to the same station. (Editor's logging)

12510: SQLB: Tadeusz Kosciuszko, a Polish roll-on/roll-off cargo and container ship,

sending ARQ messages in Polish at 2005. (Editor's logging)

13779: BCA95, Shanghai PRC, 425/50R at 1130 calling CLN405 "Havana de Shanghai" and "YR CLN405 ZDK UT QRM PLS ZIP AND HR BCA95 ZMC? HR NW FOR YOU." (Kneitel, NY)

13803: RCR78, Khabarovsk Meteo, USSR, with a weather report at 2027, 1000/66R. (Williams, CO)

14777: SUC, Cairo Aero, Egypt, with RYs test tape, 850/66R, at 2046. (Williams, CO)

16049: Unidentified station running RYs at 1620, quitting at 1625. Was 425/100N. (Williams, CO)

16691: UTOM, Soviet ship, with RY's in 170/50N at 1228. (Kneitel, NY)

17555: LOL, Buenos Aires Naval Radio, Argentina, testing with RYs at 2023, 400/100N. (Williams, CO)

18650: SOT265, PAP, Warsaw, Poland, ending its news broadcast in French at 1730. Was 425/66R. (Lingenfield, VA)

19281: 4UN, United Nations, Geneva, Switzerland, with telexes at 1747 to 4UV, UN, Nairobi, Kenya and other UN posts, 170/100N. (Lingenfield, VA)

20350: "VXU," Unidentified station, but believed to be NBA, U.S. Navy, Balboa, Panama, sending a tape of RYs and SGs at 1759. Since this is a regular NBA frequency and the test tape was formatted the same as that used by NBA, they could be the same station. (Williams, CO) What do you readers think? (Editor)

PC

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SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

Space shuttle communications have invaded the ham bands and it's fun for anyone who tunes in.

For the past few shuttle missions, one 2-meter group in New York City has been relaying shuttle communications over its repeater high atop the Chrysler Building, and hams and scanner listeners by the thousands are tuning in to eavesdrop on astronauts, scientists, and mission controllers.

The Metropolitan Radio Association operates the 147.000 MHz repeater in midtown Manhattan and receives the shuttle audio feed by landline and relays it over the repeater for most of the day and evening during flights. Several members of the group take turns as control operator on the net and handle the control functions of the repeater.

Although the New York repeater, known locally as the "double-oh machine," has a range of more than 50 miles in radius, many other repeater groups in Philadelphia, Washington, Pennsylvania, New Jersey, New York, and Connecticut pick up the New York repeater's signal on remote bases and relay it over their local repeaters for local members to hear the shuttle audio.

The Federal Communications Commission allows amateur radio operators to relay communications involving space shuttle missions.

The 147.000 MHz repeater's shuttle feed is set up by Dave Minott, WA2EXP, whose call sign is IDed by the repeater. More than 6,000 people listened in to the repeater during a spring shuttle flight, according to repeater control operators, and the number of monitors certainly is increasing. Although it doesn't take into account scanner listeners, hams who checked in during a recent shuttle rebroadcast were located in New York, New Jersey, Pennsylvania, and Connecticut.

During the early August flight of *Challenger*, two of the astronauts aboard the shuttle were amateur radio operators, so there was intense interest by hams back on Earth. The two ham astronauts were Tony England, W0ORE, and John David-Bartholomew, W4NYZ. The hams operated a ham station aboard the shuttle to communicate with various hams, schools, and ham clubs on the ground. During some flights, voice communication was attempted on 145.550 MHz and at other times, telemetry data could be heard on the frequency as the shuttle passed over the United States. The shuttle also transmitted slow-scan television signals on 145.630 and 145.690 MHz. Many hams and scanner listeners were able to hear the telemetry signals with simple whip antennas on the scanners or on their hand-held radios. The first ham astronaut to operate from space was Owen Garriott, W5LFL.



Ron Lulov, KD2LA, sits with some of his sixth-grade science students as they use a globe to track the space shuttle's flight as they monitor its audio on the 147.000 MHz repeater in New York City. (Photo courtesy of KD2LA)

During an earlier flight of *Challenger*, one New York City school teacher who also is a ham set up radios in public schools so students could monitor the space shuttle communications via the WA2EXP repeater.

Ron Lulov, KD2LA, a science teacher at Intermediate School 126 in Astoria, Queens said, "With several scanners, a 2-meter HT and quickly built patch cords, the shuttle audio was pumped through PA systems in several schools for a listening audience of about 4,000 students. Many students who were not even aware that the shuttle was on a mission suddenly felt part of the action via radio."

In one simple setup in a classroom, Lulov connected a Kenwood TH21-AT handheld to a guitar amplifier for all the students to hear the communications. Students also track the shuttle's flight on globes in the classroom as they hear direct reports.

Lulov said he plans to set up the listening post for students again in the future and added that "the WA2EXP repeater group really

did a great service for education and exposed many children to the world of space communications."

Lulov said he is willing to help other teachers who would like technical assistance in monitoring the shuttle flights and setting up patch cords for connecting scanners and transceivers to amplifiers and public address systems. He can be contacted by writing to: Astoria Intermediate School 126, Queens, 31-51 21st Street, Long Island City, NY 11106.

800 MHz Illegal?

A bill introduced in the California Senate by State Sen. Herschel Rosenthal essentially could outlaw the sale and use of 800 MHz band scanners in that state.

The bill, introduced earlier this year, is aimed at protecting the so-called "privacy" of cellular mobile telephone communications that take place in the 800-900 MHz band. If eventually approved, violators of the proposed law could be subjected to fines of up to \$2,500 and a year in jail for the first offense and stiffer penalties for subsequent violations.

While the proposed law rambles on for seven pages, the use, sale, advertising for sale, manufacturing, assembling, possession, transportation, importation or furnishing of a receiver capable of eavesdropping on cellular mobile telephones in the 800 MHz band would be subject to the fines and penalties as stipulated.

The law would affect those who monitor other communications in the 800 MHz band, including police, fire, government services, paging, business, industrial, and the proposed amateur radio band at 902-928 MHz.

Students in KD2LA's science class listen to space shuttle communications via a Kenwood TH21-AT patched into a guitar amplifier. (Photo courtesy of KD2LA)



Not only does the law impinge on the traditional rights of American citizens to listen to the airwaves as set forth in the Communications Act of 1934, it raises constitutional questions and is probably in conflict with federal pre-emption of radio regulation.

Last month, we told you of efforts under way in Pennsylvania to ban the mobile use of scanners. Hobbyists must stand up for their rights if they are to continue to enjoy their pastime. Our California readers should obtain a copy of Senate Bill No. 1431 and write to their state senator and express their feelings and concerns about the matter. Others who also would like to write their feelings about the proposed law in California can write to Sen. Herschel Rosenthal at: State Capitol, Sacramento, California 95814.

New 800 Scanner

Although they may become illegal in California, Uniden Bearcat has come out with an 800 MHz scanner. Regency beat them to the punch with several models, but now die-hard Bearcat users can tune in 800 MHz.

The Uniden Bearcat 800XLT features expanded frequency coverage, which many scanner users want these days. The 800XLT receives 40 channels (two banks of 20 channels) in the following bands: 29-54, 118-174, 406-512, and 806-912 MHz. The 800XLT also features an instant weather switch that automatically tunes in the strongest National Weather Service forecast station. The radio scans at a rate of 15 channels per second and operates on either 120 volts AC or 12 volts DC. Two AA bat-

teries are used for the scanner's backup memory.

For those interested in specs, the 800XLT's sensitivity is rated as follows on the various bands: 0.6 microvolts on 29-54 and 136-174 MHz; 0.8 microvolts, 60 percent (1 kHz modulation 10dB SINAD) on 118-136 MHz aircraft band; 0.8 microvolts on 406-512 MHz; and 1.0 microvolts (± 3 kHz deviation 12dB SINAD) on 840-912 MHz. The radio's selectivity is rated at $-55\text{dB} @ \pm 25$ kHz. The audio output is 1.5 watts.

The 800XLT includes two whip antennas, one for 800 MHz, and features a special AFC circuit to lock on both 12.5 kHz and 30 kHz spaced channels on 800 MHz.

For more information, contact your favorite dealer or call Uniden Bearcat at (800)-SCANNER.

Your Chance

We want to hear from you here at POP'COMM. We're interested in your clippings, photographs, frequency lists, gripes, comments, questions or tips. We're more than willing to pass along information if you send it our way.

While we are unable to personally answer every single letter that we receive, we give every note our attention and often consolidate many correspondent's questions into a column. Let's hear from you today! Write to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909.

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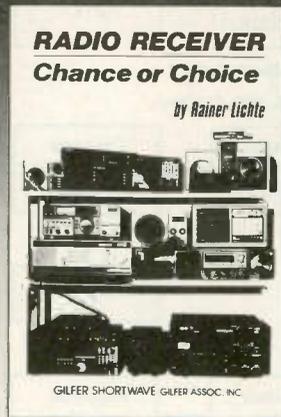
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You owe it to yourself to be informed. This comprehensive new book explores the receiver world through real-life tests conducted by internationally renowned radio engineer, Rainer Lichte. Read scores of no-axe-to-grind reviews about such famous brands as Panasonic, Sony, Yaesu, Kenwood, Drake, Eska, Hitachi, Grundig, Phillips, JVC, Zenith, Dynac, ITT, Bearcat - both old and new models, including ICOM R71A, Sony 2010, and Yaesu 8800. Explains the mysteries of technical specs, too. A must book.

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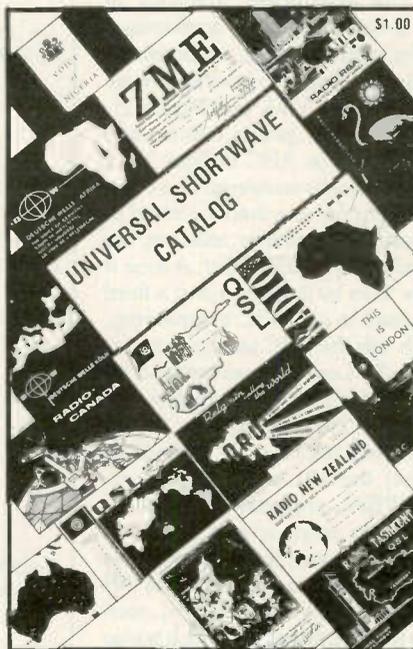
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BROADCAST TOPIK

BY MARK MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

"The merry Mex (Mexican) is 8 under at the halfway mark. Dan Lovett from Baltimore. BASEBALL: Peté Rose . . . player/manager . . . of the Reds had two hits last night and now needs 23 more to Ty (tie) Cobb."

Any of you who listen to sports at all will recognize the style of Dan Lovett of ABC Radio. Have you ever wondered how so much sports is packed into two minutes? It takes a big team helping Dan to make it sound as good as it does. Lovett knows his stuff and is an excellent ad libber, but the number of people behind the scenes is amazing. As I write this Dan Lovett has just finished a week of sports talk shows in Baltimore at WBAL, substituting for the regular host. In addition to two hours of sports talk, he had to do his regular west coast feed during the BAL talk show. I thought you might enjoy spending a few moments to see how it was done. Few people realize just how much coordination and how many people are involved in producing a network show when the host is not in New York, even for two minutes. Then, just for fun, let's add the local talk show.

Lovett's broadcast is from 6:20 p. m. NYT to 6:23 p. m.; the last minute is for commercials. The broadcast started as you read above on August 9, 1985. You may follow with the block diagram I've included (see Figure 1). The equipment involved at Baltimore is a band-expander transmitter, which uses the regular dial-up telephone to transmit studio quality audio from Baltimore (or wherever) to New York (see Figure 2). The engineer at WBAL places calls on two separate telephones to ABC in New York which are automatically answered by a computer. The telephones are then switched to the band expander transmitter, made by the Rood Company (about \$10,000). A tone is placed on the lines by the Rood and a third telephone is used to call ABC engineering. The BAL tech tells the ABC tech that tone is being sent for the Lovett broadcast and he uses his Rood receiver to equalize the telephone lines in New York. If he is successful (sometimes another call is made to get a better line), the BAL tech turns the tone off and puts WBAL programming into the Rood for ABC to monitor and check for quality. If it sounds good, the BAL tech asks New York to feed programming on the IFB loop for BAL to check out. The BAL tech then places a fourth phone call, which is also automatically answered and connected to programming for Lovett to get cues from ABC. If this dial-up is good, then the two techs can hang up the "comm-line."

The above calls take place about 45 minutes before the broadcast so there is time to make changes if it is necessary. Now as broadcast time nears, say 6:18 p. m., the talk show has been underway for over 15

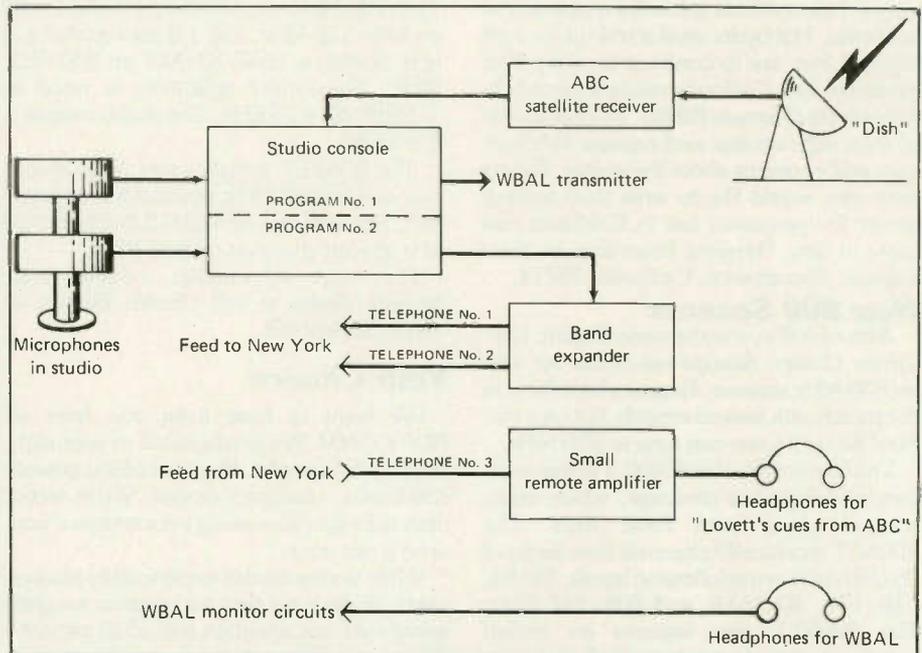


Figure 1: An ABC Remote set-up.

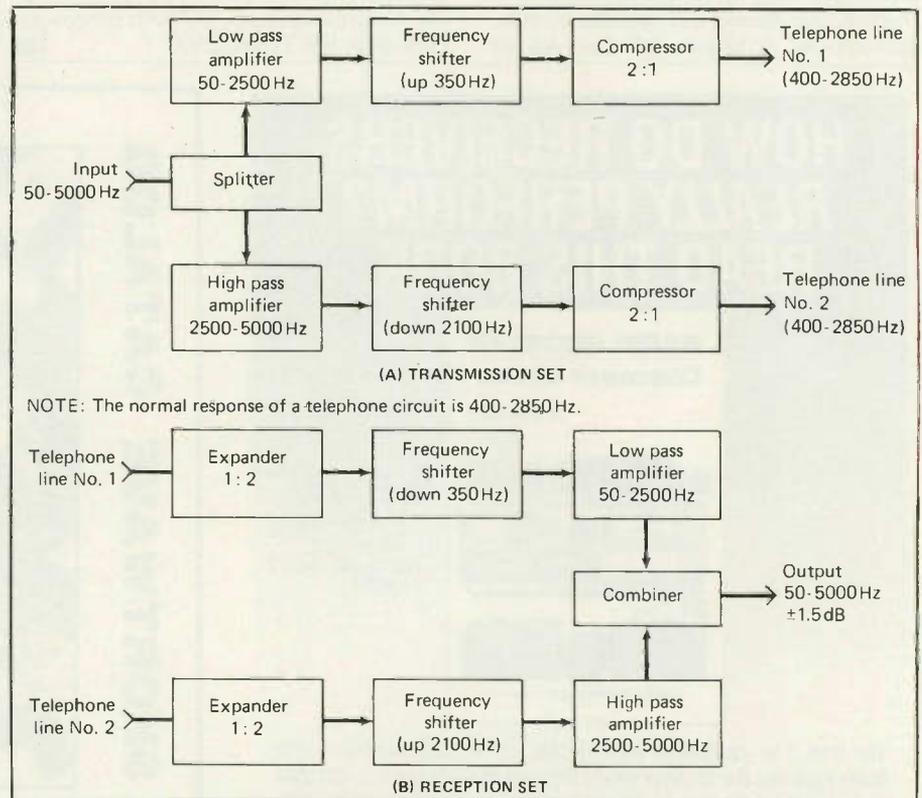


Figure 2: How a bandwidth expander works.

minutes and Lovett will call for a commercial break, during which time he will change the headphones he's wearing to those connected to the IFB line from New York. Then with the second mike in his studio he will communicate with his producer in New

York who tells him what "cut-ins" (actualities) they have for him and what the outcues (the last words of the actuality) are. Lovett also gives his cues for New York to start the cut-ins. Any last minute ball scores are given to Lovett, as well as any late-breaking



Here is a photo of WNIL-WAOR.

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*not a local signal (reception could vary)

COMPLIMENTS OF

NORTHWEST ORIENT

WAXY 105.9

Budget

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You get more than just a car at Budget.

Look for these on airline flights.

stories. All of this takes less than two minutes and the producer also gives Dan a time check. The WBAL clock was perfect with ABC (it's fed from WWV). Meanwhile, one of the BAL techs has been playing two minutes of commercials so the BAL listeners are listening to something. At 6:19:57 the BAL spots end and they switch to the ABC network (satellite feed) for the 6:20:00 Dan Lovett Sports show. At the same instant, Dan starts speaking in the next studio. However, his microphone is feeding to New York before it is heard in Baltimore. This may seem crazy, but remember, the actualities and commercials are fed from New York; only Lovett is in Baltimore. Once again the IFB line from New York comes into play. Lovett hears the cut-ins he has called for

Station Updates

Call AM	Location	Freq	Pwr	Ant
WABT	Madison, AL	730	1/0	0
KNCO	Grass Valley, CA	830	5/0	-
WIVS	Crystal Lake, IL	850	5/0	0
WMKS	Gordon, GA	1120	10/0	0
KCOL	Fort Collins, CO	1410	5/1	DA-2
WGFS	Covington, GA	1430	5/0	0
FM				
WJIS	Bradenton, FL	88.1	N/C	396'
WAUP	Akron, OH	88.1	3.3	803'
new	Batavia, NY	90.7	.92	N/C
KWBI	Morrison, CO	91.1	100	N/C
KCHO	Chico, CA	91.7	7.71	N/C
WBTU	Kendallville, IN	93.3	50	492'
KEYF	Grand Coulee, WA	98.5	25	462'
WHYI-FM	Ft. Lauderdale, FL	100.7	100	1006'
WWDC-FM	Washington, DC	101.1	22.5	761'
KRBO	Red Bluff, CA	102.7	12	1017'
WVTN	Gatlinburg, TN	105.5	.31	945'
KBJJ	Marshall, MN	107.1	N/C	242'

KEY: D = Daytime N = Nighttime, DA = Directional Antenna DA1 = Same Pattern Day & Night DA2 = Different Pattern/Power Day/Night O = Omni Antenna Day and/or Night ‡ = Special Operation or Critical Hours N/C = No Change

over his headphones. If he was to listen off the ABC line, the delay of his own voice would be distracting. To watch his lips in the next studio one would think it wasn't the same program. There is about a half second difference from the moment Dan speaks to the actual on-air time due to the distance of the satellite transmission.

At exactly 6:22 Lovett finishes: "Dan Lovett in Baltimore." ABC runs one minute of commercials ending at 6:23, at which time WBAL runs another couple of spots while Lovett again checks with ABC to see if the program went okay and any other last minute instructions for later. He signs off with New York and changes headphones back to BAL programming. Then as the commercial break ends on BAL, Dan resumes the sports talk show "Sportsline." At this point the second tech at BAL, who has been monitoring the levels feeding ABC, will disconnect the telephone circuits and turn the equipment off.

There are two techs involved in Baltimore and at least two in New York, plus a producer or two and one other person in the field for each cut-in. Some are done live, so it takes a gang (team) of people to put a two minute sports show on the network lines. Anyway, I thought you might enjoy a little "behind the scenes" trip into a network feed. By the way, WBAL does not normally carry this particular feed of Dan Lovett, so the listeners got somewhat of a behind the scenes treat of network programming as well—or how to do two things at once!

New Band Is Coming

Do you realize that the opening of the 1605-1705 kHz band to AM Broadcasting

is only five years away. If that hits you as odd, so will the fact that there has been no mention of the availability of radios that will tune this expanded band. Now, of course, most of us already have receivers that will tune the new frequencies, but do we have portable or auto radios that tune above 1600 or know of sets that will tune this range? AM stereo has been around for about four years, and I still search the Sunday paper every week never finding a single AM stereo radio of any description. I have a feeling this new range is only for the hearty souls like you and me and a few adventurous broadcasters like the ones who got their feet wet with UHF-TV back in the 1960's. Now, by contrast, I just saw my first stereo TV tuner/receiver this week. There is much more AM stereo than TV stereo, but Technics has come out with a receiver for stereo TV! No, I'm not complaining, it's great; I just can't help making the comparison.

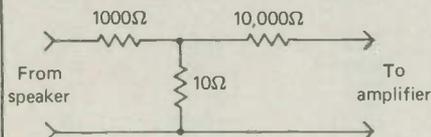
Recording

A few columns ago I mentioned tape recording from receivers. I would like to present some more ideas for you to consider. If the method currently in use in your shack is to put a mike in front of the speaker, let's see if we can make some improvements. I have a small audio mixing panel. There are many of these available today from NuMark, Radio Shack, and others. I have a four mixer panel that has been very popular with radio stations over the years for doing remote broadcasts. It is the Shure Brothers model M-67. Since it has three mike inputs and one line input, I had to make a few modifications. The unit also had "high pass" filters for elimination of hum or other low frequency

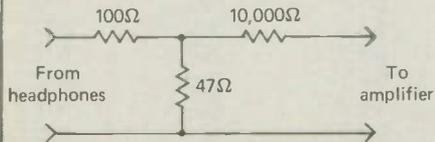
THE MONITORING MAGAZINE

December 1985 / POPULAR COMMUNICATIONS / 57

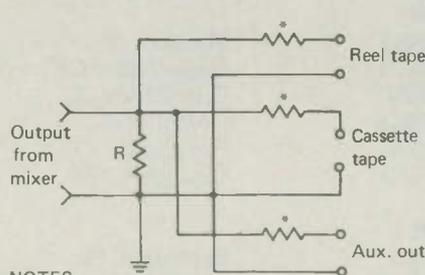
INPUT "PADS"
to knock the level down to microphone level



NOTE:
If level is still excessive add another 10Ω across the existing 10Ω resistor.

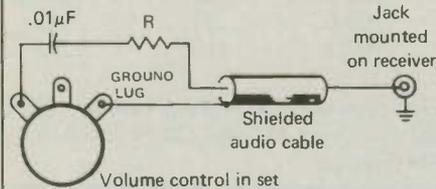


OUTPUT "PADS"
for using more than one recorder



NOTES:
1. R = Output impedance of mixer
2. * = 4700Ω, but adjust to obtain proper level in recorders

FIXED LEVEL RECORDING CONNECTIONS:



NOTES:
1. R = 10,000 in solid state set.
470,000 in tube type set.
2. The ground lug must be determined

AUTHOR'S SHURE M-67 MIXER:

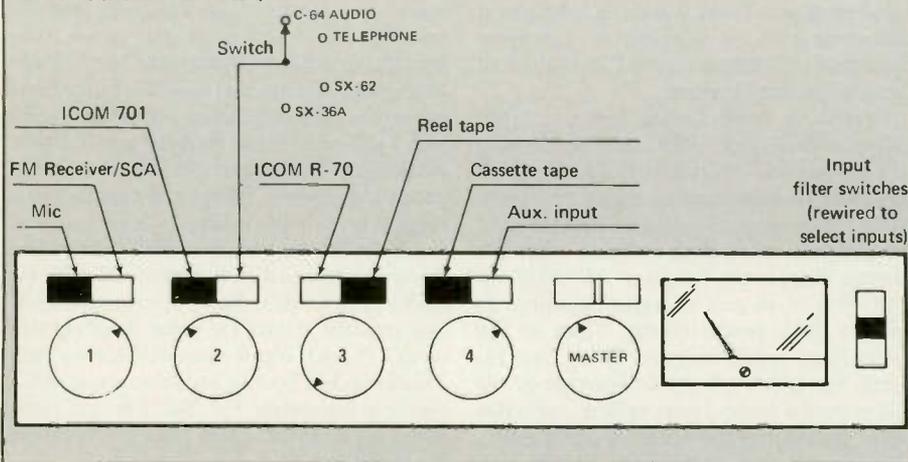


Figure 3: Using a small "mixer" for recording in your shack.

noise. Not having a need for these filters, I changed them over to input switches so that I could switch eight different sources into my four mixers (see Figure 3 for more details).

A lot of the mixers have only a mike level input and obviously our radio(s) have a much greater level. It is necessary to build a "pad" to knock the level down. Most radios will not have a recorder output unless they are a recent vintage. So the second thing we have to provide is a connection for recording. The speaker is the most obvious place to get sound. The headphone jack is another good location. Both of these points have

drawbacks. They both are affected by any tone of volume controls on the radio. Usually the headphone circuit will disconnect the speaker, which may be a problem for monitoring. The best place to get a recording connection from a receiver is before the volume control. This makes the recording volume setting independent from the radio or receiver. Before I go any further you must determine the type of radio or receiver you have, including TV sets you may be thinking of taping from. It is imperative they not be of the AC/DC type where one side of the chassis is connected to the AC line. Almost all

small TV sets are of this type and should be avoided completely. Choose a TV that has a headphone jack on the front panel or leave them alone, unless your experience level is sufficient that you are aware of the dangers of which I speak. I do not have a list of radios that are or are not AC/DC. Don't assume that because a set is transistor it is safe, because transistors are low voltage devices.

The easiest place to get audio from a radio is the volume control itself. It's easy to find and has enough room around it to make a couple of connections. Shielded wire is a necessity but should not be run halfway around the room to get to the mixer panel unless it is low impedance (below 1,000 ohms). Don't be afraid to experiment with the resistance values I have shown. The final object is to get a good sounding recording with all the quality the source has to offer and the level control near the middle of its range.

The connection to the input of the recorder(s) is just as important. The recording control should be in the center of its range also, or slightly less. If the recorder has automatic recording level then the level should not be so great that it brings up the background noise to the point of distraction when the frequency is quiet.

Mail Call

From VE7HL in Vancouver, a clipping from the *Vancouver Sun* mentioning "anti mosquito radio." No, really... CIME-FM in Steadele, Quebec and CFNY in Toronto imported an idea from France to reproduce an audio signal that causes the female mosquito (the biting one) to flee. I don't know, it might be easier to move to Maryland!

Robert Apicella found 800 kHz to be a bonanza around the first of August. And who said no DX in the summer? In thirty minutes he logged three countries! They were CKLW, PJB, and Radio Prague (approximately 840 kHz). Jim Buscher wants to know who the DJ was in the August column! That was a promotion flyer from WWDC. There was probably insufficient room for the entire picture, Jim, but it was Ed Graham, who is about 20 years younger than Gallagher. Gallagher is currently at WWDC while Graham is PD at WNTR (1050) and does weekends at WBAL. Glad you liked it, I thought it was funny.

Gatlinburg, Tennessee, has a TIS on 530 and the NPS runs several along the Great Smokies on 1610. These from David Patton. Robert Smith is a true DXer. A former pilot that retired to a quiet country location with a 1940's vintage SX-62! A man after my own ways. He is now wanting to buy some recent gear and my reply to him was direct with his SASE.

By the time you read this, NVOU should be on the air! M.C. wrote to tell me he's going "legit" with "community broadcasting," but mentioned no time or frequency except October '85. He says he's been off the air for about a year and is proud to be going legal. I'm happy for you, M.C., but do tell us

PIRATES DEN

BY DARREN LENO, WD0EWJ

FOCUS ON FREE RADIO BROADCASTING

In the April and May 1985 Pirates Den columns, we reported that KPF-941, an auxiliary radio station licensed by the FCC to operate on 1622 kHz, was bending the Commission's rules a bit, or rather, interpreting them in a new way. Instead of sending program material back to the parent stations (WOZI-FM in Presque Isle, Maine and WOZW-AM in Monticello, Maine, both owned by Weiner Broadcasting Co.), KPF-941 was broadcasting directly to the public. The FCC put a stop to that in April, 1985.

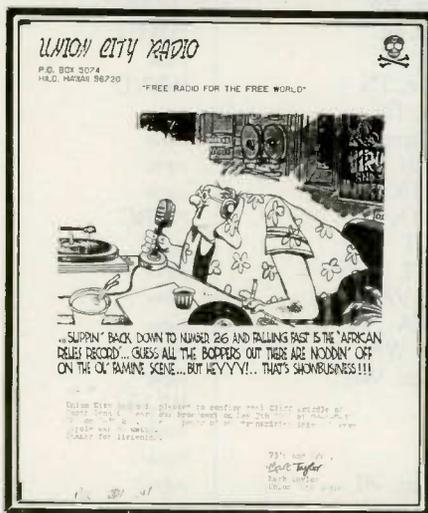
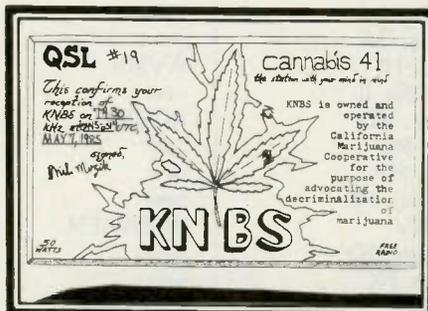
Now, Allan Weiner, the disgruntled 31-year-old president of Weiner Broadcasting and his friend, J.P. Ferraro, 36, have taken their feud with the FCC to Capitol Hill.

Congressman Mario Biaggi, a Democrat from New York whose district includes Yonkers, has submitted a bill to the U.S. House of Representatives that, if passed, would license Weiner Broadcasting and J.P. Ferraro to operate KPF-941 as a non-commercial radio station serving the Yonkers, New York area. A spokesman for Rep. Biaggi stated that it was unfair that Yonkers, a city of 200,000 people, has no radio or TV frequencies assigned to it by the FCC. According to Weiner, "Yonkers is the only city of its size to have been left without a broadcast outlet in the entire nation."

A second portion of the bill would relieve Weiner Broadcasting Company of any liability for its past operation of KPF-941. Weiner says the FCC has attacked his Company's licenses for WOZI and WOZW, charging Weiner operated KPF-941 illegally.

Weiner issued a press release commenting on Congressman Biaggi's efforts in which he said, "It is a great relief to me and my company and the listeners in both Maine and New York who we have tried to serve to the best of our ability. Congressman Biaggi has examined all of the charges brought by the FCC and has come up swinging for us. That says a lot. Our purpose was to provide a station for Yonkers, a city which desperately needs one. We were not and do not intend to make money in this. It is totally non-commercial. We started this because of the simple desire to help our hometown preserve its identity through the beauty of broadcasting."

Weiner went on to blast the FCC for "attacking" his character, and posed the question, "why (do) we allow the FCC to rule on who has the 'character' to be a broadcaster?" He continued on and further stated, "We would never allow our printed media to be subject to such governmental scrutiny. It is



Some pirates put themselves in the midst of political controversy, often taking the minority point of view. Union City Radio, The Voice of Venus, and KNBS also include their opinions on their QSLs. (Thanks to Cliff and Elizabeth Priddle)

patently offensive to all who hold the First Amendment in esteem."

Earlier this year, Ferraro and Weiner were asking listeners and supporters to write the FCC and New York senators in favor of granting a waiver of the rules to allow KPF-941 to resume operating. I'm sure they would welcome letters commenting on this latest development. Address them to KPF-941, Dept. PC, PO Box 327, Hastings-on-Hudson, NY 10706.

Across The Dial . . .

Clandestine Voice of Mid-America,

CMA One of Ohio's best, Terry Provance, tuned in CMA on 7425 kHz after 0400 GMT. Unfortunately, and for no known reason, listeners were asked, to send reception reports to *Popular Communications*. Sorry folks, but we have never offered to forward mail to pirates. Your best bet would be to send reception reports to shortwave clubs who publish pirate loggings.

KBBR "Capt. Mahoney was playing a variety of music on 7440 kHz between 0425 and 0500 GMT when Nick Williams of New York tuned in. Nick says the station claimed a power of 50 watts. Two weeks later, Lance Pearson in New York heard KBBR, again on 7440 kHz, from 0400 to 0426 GMT. Lance says the announcers name is Capt. Cahoney. No address or phone number was announced.

KKMO Pete Verrando of Texas heard this new pirate on 7420 kHz at 0110 GMT. He says they have a "totally professional sound."

KNBA and KNBD Cliff and Elizabeth Priddle have been hearing these two pirate from their Oregon listening post on 1616 kHz. The pirates claim to be in Marine City, California. No address was given, but the Association of Clandestine radio Enthusiasts was mentioned during one transmission. The Priddle's wonder if these stations are related to KNBS, another station they recently heard.

KQRO Elizabeth and Cliff Priddle in Oregon have heard what they think is a new pirate on 7440 kHz from 0800 to nearly 0900 GMT. This wasn't the first time they heard KQRO, but rather the third time within one week! One transmission continued for three hours. Pirate hounds on the east coast will have to stay up late to hear this one! A British Columbia address was announced.

Medieval Radio Mary Knowlson in Pennsylvania heard them on 7430 kHz at 0050 GMT. A male announcer was identifying the

station after each rock 'n' roll record, and asking that reception reports be sent with three First Class stamps to Box 5074, Hilo, HI 96720.

Natural Radio System Jacques Baker in Ohio naturally found this pirate on 7425 kHz at 2245 GMT. "They were mostly playing old cowboy songs from Roy Rogers to Gene Autry" said Jacques. This continued until 0000 GMT.

Pirate 90—Under the Boardwalk This FM pirate was heard by Greg Wadden, in the Toronto, Ontario, area on 89.9 MHz, from 0150 until 0305 GMT. It also identified as "The Toronto Islands Broadcasting Society." The programming was made up of several shows, including one for bird watchers called "A Word in Edgewise," hosted by "Jack." A lady named "Roxie" hosted an hour of classic and modern rock music, and said Thursday broadcasts were reserved for "hot jazz." No address was mentioned, although Jack was reading some letters received from listeners.

Secret Mountain Laboratory This station had a fair signal into Rhode Island when Norman Driskell found them on 7435 kHz at 0120 GMT. SML was playing the County & Western and bluegrass music that they've become known for.

WMTV Lee Hazlewood in Mississippi found this interesting pirate near 7420 kHz at 0112 GMT. A phone number was given so that listeners could call the station.

Zeppelin Radio Worldwide Jeff Leach heard a man with a "German accent" and plenty of German music from 0343 until 0402 GMT on 7430 kHz. Jeff speculates that this pirate is located in Ohio since they mentioned that state and the Ohio River several times. Their address is PO Box 245, Moorhead, MN 56560.

In Conclusion . . .

An article that appeared in the *Montreal Gazette* says that the real losers to the off-shore pirate ships broadcasting pop music to the British mainland isn't the frustrated government that doesn't know what to do with these broadcasters, but the independent radio stations that have to compete with the pirates while paying incredible royalties to performers whose records they play. The *Gazette* quoted Derek Chinery of Radio One as saying, "Every time we play a record we pay about 25 pounds (\$38 Canadian). For an hour we are talking about 400 pounds (\$600 Canadian)."

A commercial station in Britain also must subscribe to a news service and rent the antenna they use to broadcast. All of this takes at least one-quarter of the station's total income. Independent stations must also restrict their programming to no more than 50% music. No wonder that Laser 558, with its "never more than a minute from the music" format has become so popular.

Readers have been sending me pirate radio related clippings from counter-culture magazines and newspapers. Such "underground" or "new media" publications as

Overthrow, Living Free, Black Flag, Test Tube, and a few with names I can't print here, seem to have taken an interest in underground broadcasting. Much of the discussion taking place seems to have been stimulated by a two-piece article published last year by *Flipside* magazine. Don't be surprised if you begin notice an increase in pirates who are blatantly political.

Readers searching for information on clandestine broadcasters will find Gerry Dexter's *Clandestine Confidential* newsletter fascinating. Each month, Gerry shares the results of hours of research into the political world of clandestine broadcasting. Six issues can be had for \$10 to G.L. Dexter, Dept. PC-12, RR 4, Box 110, Lake Geneva, WI 53147.

The Association of Clandestine radio Enthusiasts has added a new clandestine column in their monthly bulletin, *The ACE*. The *Clandestine Report* is composed by Andrew O'Brien and George Zeller and is bound to be a hit with other clandestine enthusiasts. A*C*E is also a good source for pirate radio information. To learn more about A*C*E, write them at Dept. PC-12, PO Box 452, Moorhead, MN 56560.

Thanks to everyone who took the time to participate in this month's edition of *Pirates*

Den. If you have any comments concerning this column, or better yet, contributions of loggings, reproductions of pirate QSL cards, pennants, information sheets, or news clippings, please send them along. My address is *Pirates Den*, c/o Popular Communications, 76 North Broadway, Hicksville, NY 11801.

The Holiday season is upon us! To the dedicated pirate DXer, the Holidays can mean a stocking full of pirate QSL cards. Christmas has long been a favorite time of the year for underground broadcasters. But New Year's is even better! Keep a close watch for pirates on both Christmas Eve and New Year's Eve, or at least try. I know how the festive atmosphere of these occasions can lure one away from the receiver. A cup full of egg nog is no match for an ear full of static, but keep in mind while you're opening a present or blowing a horn, that you might be missing out on some easy loggings!

Remember that most pirates operate on Friday, Saturday, and Sunday evenings. Use the frequencies and times mentioned in this article to coordinate your monitoring. There are pirates out there every weekend just waiting to be heard! All you have to do is listen, closely and carefully. I'll talk at you next month!

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CIRCLE 24 ON READER SERVICE CARD

ON THE LINE

BY JULIAN MACASSEY, N6ARE

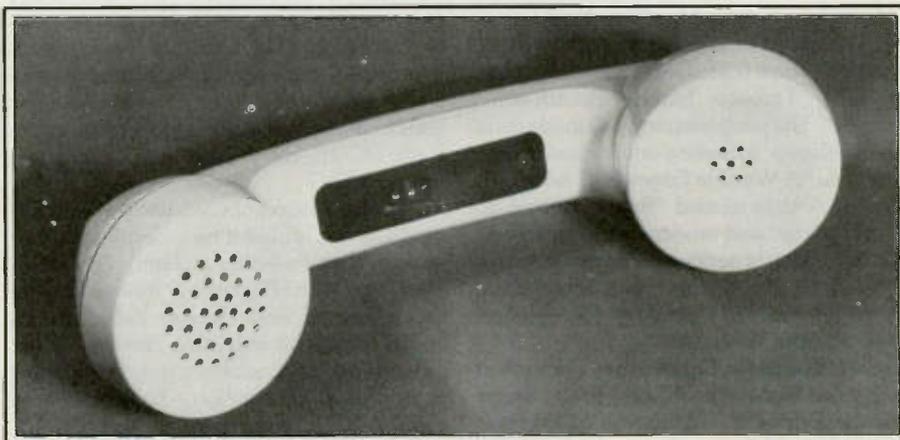
NEW AND EXCITING TELEPHONE TECHNOLOGY

Now is the time of year when you will give and receive gifts. Phones and accessories are ideal. Every time the recipient makes a call, they will remember you. If you are on a budget, or prefer to give "homemade" gifts, now is the time to install an extension jack or move the phone to the other side of the bed. See the August 1985 "On The Line" column for instructions on how to do this.

The main telephone item is, of course, telephone sets. The most used phone is known as a POTS (Plain Old Telephone Set). These are made by AT&T, IIT, Comdial, and Northern Telecom. The Touch-Tone® versions are called "2500" sets and the rotary versions are called "500" sets. These phones are widely available, and even some radio stores sell AT&T phones. AT&T phone stores, and some others, sell reconditioned phones. These are an excellent buy. The phone beside you now, if it is from the phone company, is probably reconditioned. A reconditioned phone is completely rebuilt and should be good for 20 years or more before it needs repair. A new 2500 set costs about \$60 and a reconditioned model sells for around \$42. Both of these prices tend to be much cheaper than some of the imported phones that do not work as well. Check carefully when buying your phone. There are some imported "clone phones" that look like the old phone company POTS we know so well, but are poorly built.

There are some really nice looking, well-built phones available, mostly from Scandinavia (which has always placed emphasis on good design). The Swedish company Ericsson makes a line of phones with prices varying from \$130 to \$1200. Their main model, called the Diavox, is a stylish phone with snap-on covers so you can change the color of the phone to suit your taste or decor. This phone is the standard desk phone supplied to customers by the Swedish phone company. They also sell the Diavox, made of real hardwood. This is a very ideal gift for someone who does not hear or talk at normal levels. Prices are around \$35. AT&T also sells these special handsets.

Room noise can be a problem especially if there are 12 young children in the room, or the radios are all on at once. Hearing what is being said on the phone can be hard. One of the reasons for this is the room noise is coming into the handset via the mouthpiece and being fed into the earpiece. In a noisy environment, try putting a hand over the mouthpiece and see what I mean. Also the party at the other end will have trouble hear-



AT&T "Volume Control" handset. This "G2" handset has volume adjustment of the earpiece.

ing because of the background noise coming down the line. The Roanwell Corporation makes a noise cancelling microphone that screws into the mouthpiece of a standard phone handset. This handset is known to your phone company as a "G2." Roanwell calls their noise cancelling microphone either "Happy Talker" or "Confidencer." These are priced at about \$10. They come in all the usual telephone colors to match the handset.

Hands free telephone use is important to many people. Workers sitting at typewriters, control consoles, and computer terminals need to have both hands free for their tasks. There are many headsets available in many styles with a variety of features. Every manufacturer makes a headset that will work with a POTS. The same can not be said for imported and electronic phones. Non-standard phone owners will have to check carefully before buying a headset. The best thing to do is bring the phone in question into the store and try it with the headset.

There are about eight manufacturers of headsets. The most famous headset is the Plantronics Inc., "Starset." This is the headset supplied by the phone company. Other manufacturers are: Danavox, ACS, Commtek Electric, STC (ITT), DEKA, NADY, ACS, Gemini, and UNEX. Prices vary between \$50 and \$200 depending on manufacturer and model.

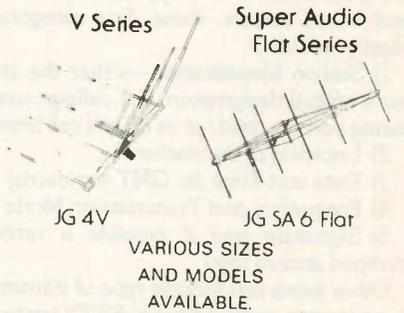
Then there is "Executive Handsfree," the speaker phone. These originally were reserved for executives because they are too noisy for the peons out in the bullpen. They also used to cost \$600 and who knows how much to rent. Things have changed! One can now buy a good speakerphone for under \$100. The best cheap speaker phone



The Roanwell Corp. "Happy Talker" noise cancelling mouthpiece.

is the Panasonic Easa-Phone Model KX-T1020. This speakerphone will work quite well powered by the phone line. There is an AC adapter available if the phone line cannot supply enough current to drive the speakerphone. Radio Shack sells the same speakerphone under their own name, Duo-fone-101, catalog number: 43-277. Radio Shack price is about \$50. The Radio Shack model will not accept an AC adapter. This device uses a custom IC made exclusively for Panasonic. Motorola has recently come

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The Zoom Telephonics Inc. "Demon Dialer."

out with a speaker phone IC, and expect to see more good speakerphones on the market soon.

Speaker phones and headsets may seem strange items to have in the home. Consider the places at home where holding a phone handset may be tricky—the kitchen, the workshop, the sewing room, or the bathroom. Any place where you will be using your hands or moving around a lot may require a hands free phone. The same can be said of the workplace. A speaker phone or handset is the preferred way of talking on the phone while operating machinery, not only for comfort, but also for safety.

Phone answering machines are great gifts for bachelors and others who are not at home much. Models start at about \$60, and go all the way up to \$350, depending on quality and features. The simplest machines will not even take a message but only announce, useful for announcing another number to call. The most complex will record the time the call was received, besides allowing the owner to check his messages from any phone in the world. Some of the deluxe models allow the announce tape to be changed remotely. Buy a machine from a known manufacturer and check that the tapes are cassette tapes so they can be easily changed when they wear out. Some of the "remote" machines use a special beeper to access them to retrieve messages. The latest models use Touch Tone®, removing the worry about leaving home without a beeper or having the batteries go dead. Before deciding to purchase a phone answering machine, look at several models and consider what features are really needed.

Automatic dialers are really great gifts considering most phone owners call about four numbers continually. Radio Shack, AT&T, and Panasonic all make dialers with a single button for each number. The Radio Shack model 43-298 stores 32 numbers and will dial in either pulse or tone. The price is about \$60. The "absolute" whiz-bang auto dialer for techno-freaks is the Demon Dialer from Zoom Telephonics Inc. This device does everything. It will store up to 175 numbers. It will automatically dial discount long distance carriers and detect their 1 kHz tones

before entering the rest of the number. It will redial a busy number until it gets through—great for ordering concert tickets. If wired into the phone line before the phone company protector, every phone in the house can use the dialer. The "protector" is the point where the phone company line enters the premises. It is usually a small box on the outside of the building. It contains some surge arrestors. This is the point where the telephone company wire stops and the customer's wire starts. A protector is analogous to the electric company's meter. The Demon Dialer is a black box controlled by the telephone dial. The top of the line Demon Dialer costs about \$170. They also have a dialer called the Hotshot that will access discount carriers after you dial a one-second long digit. The Hotshot sells for about \$80.

One useful device to have, especially in a large house with many phones, is a "hold" system. Some phones have a hold button on them that is very useful. TT Systems Inc makes a device called Touch Hold that will provide the hold feature for all the phones on a line. To use this device, just plug it in to a modular jack. Then to put any phone on hold, push the * button for two seconds and hang up. Any phone picked up will release the line from hold. This sells for about \$20.

It is with regret that I have to announce that AT&T has decided to manufacture their residential telephone sets in Singapore. They will be moving their operations overseas in the next 18 months. A spokesman claimed this was to make AT&T competitive in the marketplace. AT&T already makes some of the best priced phones available, and they are, without doubt, the best built. The spokesman further claimed that 90% of the residential telephones sold are imported. AT&T currently holds 30% of the residential market, so that doesn't make much sense. In the future, 2500 and 500 sets will be made in Singapore. I will be testing these phones to AT&T's own specifications. The test report on them will appear in this column. AT&T has not yet decided to send their executive and PR functions offshore in order to remain competitive in the marketplace! They should consider this. An accountant costs at least 60% less in Taiwan.

phical persuasions, I want to wish each of you the best of the holiday season and a most happy and prosperous new year. See you all in 1986.

Intercepts Section BY DON SCHIMMEL

Reader Tony Wilczynski of Pennsylvania has furnished us with the results of his monitoring of USAF activities. Some of the details supplement those contained in an article by Harry Caul, "USAF Worldwide Air/Ground Networks," which appeared in the January 1984 POPCOMM.

The first portion presents additional stations/locations heard on some of the frequencies listed in the article.

Freq In kHz	Station/Activity
3081	Lajes Field, Azores
4402	Vandenberg AFB, CA
4590	Scott AFB, IL
4721	Andrews AFB, MD (VIPS)
4725	SAC Victor Channel
4746	Lajes Field, Azores
5680	Search and Rescue
5688	MacDill AFB, FL
5700	SAC Bravo Channel
5703	MAINSAIL 19/11/12/14
6730	RAYMOND 7/Cannon AFB, NM
6738	MAINSAIL 11/13/14
6750	MAINSAIL 19/11/12/24
6761	SAC Quebec Channel
7540	Bolling AFB, DC and Scott AFB, IL
9018	Andrews AFB, MD (VIPS)
9027	SAC Romeo Channel
11179	Albrook AFB, Panama and Clark AFB, Philippines
11182	MAINSAIL 6/7/9
11243	SAC Alpha Channel
13201	MAINSAIL 10/11/12/14
13205	SAC Special Operations
13215	Andrews AFB, MD (VIPS)
13247	Andrews AFB, MD (VIPS)
13993	Bolling AFB, DC
15016	MAINSAIL 1/2/3/4/5/6/9
15041	SAC Mike Channel
15091	Tactical Air Command
17975	SAC Tango Channel
18002	MAINSAIL 1/2/3
18091	Tactical Air Command
20198	Cape Radio Test

The second portion provides several additional tactical callsigns with a break-out of their respective meanings.

Tactical CS	Meaning
BEHAVE	All Military Aircraft Cont.
CAPE RADIO	NASA Operations, FL

GULL PHOTO
RAWHIDE
SKYBIRD
TIMBERWOLF

NASA Weather
President Reagan
Alert all bombers aloft
V.P. Bush

Readers Ed Pierce and Ken Johnson located the transmitting antenna of WGU20, FEMA time station through RDF means followed by physical observation. They identified the location as 39 21 12 N. Lat and 76 21 24 W. Long (Edgewood Arsenal, Aberdeen, MD). Thanks for the info, guys!

A curious transmission was reported by Reader Gary Vendetti. The signal was observed on 6997 USB Voice at 2039. Here is what he wrote: "The station was using simple speech inversion scrambling. By a little fine tuning and mode switching I was able to hear personal messages and coded messages being passed from a very strong station using the phonetics WHISKEY ALPHA ROGER. WAR as far as I know is a call used for Army MARS at Pentagon. The messages dealt with topics of sending stamps and letters and were signed by first names only. Also coded messages with number groups were passed." Gary wondered if the activity was somehow related to the hostage crisis in the Middle East.

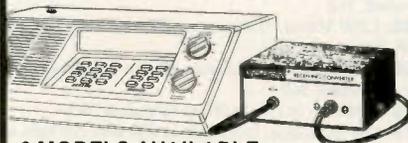
Well, onto our loggings.

- 216: CLB Carolina Beach, NC. CW beacon at 1723. (Gary Vendetti, NJ)
- 224: MO, Moosonee, Ont., Canada. Aviation beacon at 0707. (Tom Adams, WI)
- 233: QN Nakina, Ont., Canada. Aviation beacon at 0706. (Adams, WI)
- 263: YGK Kingston, Ont., Canada. Aviation beacon at 0704. (Adams, WI)
- 272: YQA Muskoko, Ont., Canada. Aviation beacon at 0702. (Adams, WI)
- 278: NM Matagami, Quebec, Canada. Aviation beacon at 0700. (Adams, WI)
- 278: SB Salisbury, MD with CW beacon at 0001. (Vendetti, NJ)
- 286: MP Montauk Point, NY with CW beacon at 2023. (Vendetti, NJ)
- 290: CO Chesapeake Light, VA with CW beacon at 2314. (Vendetti, NJ)

- 298: HL Lancaster, Ohio with CW beacon at 2353. (Vendetti, NJ)
- 305: X Sandusky, OH with CW beacon at 2027. (Vendetti, NJ)
- 316: AC Absecon Inlet, Atlantic City NJ with CW beacon at 2032. (Vendetti, NJ)
- 330: DC Washington National Airport, DC with CW beacon at 2014. (Vendetti, NJ)
- 477: WNU New Orleans, LA in CW with traffic list, Caribbean WX report at 0543. (Adams, WI)
- 540: KNID798 Stapleton International Airport. Denver CO conducting test transmissions of new Traffic Information Station transmitter at 2330. (Griffith, CO)
- 4125: WA3804 Columbia calling in USB Voice at 0559. (Bob Pastrick, PA)
- 4134.3: Coast Guard Cutter Dallas in USB Voice at 0434. (Pastrick, PA)
- 4143.2: WRA9359 April T. Becker making call in USB Voice at 0546. Later heard QSO between unknown boats on Mississippi River near Algier lock and canal at 0540. (Pastrick, PA)
- 4306: CTU4 Monsanto Naval Radio, Portugal in CW at 2217. (Lukas, NY)
- 4310: MTI Plymouth Naval Radio, England in CW at 2211. (Lukas, NY)
- 4428.7: USCG Miami relaying traffic to CG Cutter Dallas at 0338. USCG Portsmouth, VA with WX and sea condition reports for Caribbean and Gulf of Mexico at 0407. USCG Kodiak, AK calling CG Cutter Cape Carter at 0633 and calling CG Cutter Firebush at 0638. All transmissions in USB Voice. (Griffith, CO)
- 4463: WCM Cincinnati, Ohio in USB Voice working M. V. Solvee barge at 1245. (Pastrick, PA)
- 4780.6: CW 5-letter crypto groups at 0405. (Tom Kneitel, NY)
- 5210: EE/YL with 5F groups at 0113. Same message noted next night at same time and on same frequency. (DXers for BOB, VA)
- 5690: VEG Radlo Lahr, West Germany in SSB with Military/Europe WX report at 2215. (Lukas, NY)
- 5700: AIR FORCE 76 in USB Voice at 0445 talking about having rescued 7 persons from a lifeboat near East Coast of Puerto Rico. (Jeff Hall, WA)
- 5814: SS/YL 4F groups. Sends 818 Grupo 216 then in to text at 0315. Simulacat on 6804. (Shirley Lieb, IL)
- 6343: Y5M, Rugen Radio, GDR, V's in CW at 2333. (Kneitel, NY)
- 6405: SS/OM 5F groups at 0457. (Robert Homuth, AZ)
- 6506: USCG Station Norfolk, VA with special WX forecast for participants in a Bermuda yacht race plus regular forecast for N. Atlantic & Caribbean. (Lieb, IL)
- 6506.4: USCG Portsmouth, VA calling sailing vessel Crazy Horse which was responding to distress call from vessel Lucky Lindy at 0431. Portsmouth passing traffic to CG Cutter Katmai Bay at 0307. USCG Kodiak, AK pass-

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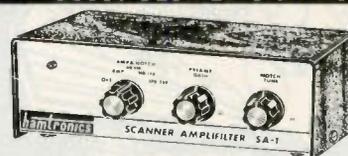
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ing traffic to CG Cutter Cape Carter at 0644. All transmissions in USB Voice. (Griffith, CO)

6512: Callsigns FOXTROT, ECHO, NOVEMBER, KILLO, DELTA, QUEBEC, DELTA HOTEL, UNIFORM HOTEL, YANKEE NOVEMBER, and YANKEE OSCAR in USB Voice/EE. Mentioned Alligator Playground and Alligator co-ordination at 0449. (Hall, WA)

6519: WOH Virgin Islands in USB Voice at 0500 with traffic list and announcement regarding a stolen boat. (Hall, WA)

6683: Canadian Military flight 520 in USB Voice talking to EIGHT FOX via phone patch through Albrook AFB. Requests EIGHT FOX to notify Brazilian Air Force regarding planes impending arrival in Rio de Janeiro. Also stated they would be departing Columbia soon and requested enroute WX from Columbia to Rio at 0409. (Griffith, CO)

6753: VXA Edmonton, CHR Trenton, CKN Vancouver, CJX St. Johns WX in English on USB Voice. WX is for Canadian Air Force. 0420-0440. (Homuth, AZ)

6790: AMTRAM 695 on AM Voice at 0400, English conversation. Plane enroute from Shannon to Athens and talking to tower, seemingly in Stockholm. Discussion of "Yugoslavian Overflight Numbers." After brief silence Tower read off series of numbers and advised pilot that the numbers were for the whole series of flights. (DXers for BOB, VA)

6804: SS/YL 4F groups, message repeated and down at 0320 with FIN. (Lieb, IL)

6826: RAFTLOG calling TOM 92 in USB Voice at 0426. Channel was identified as frequency GOLF, sounded like SAC traffic. (Griffith, CO)

6870: SS/YL 5F groups in AM Voice. Ended with Hello, Hello in English at 0943. (Pastrick, PA)

7185: WA3NAN, NASA/Goddard Amateur Radio Club, MD retransmitting air to ground commo from space shuttle Discovery in LSB Voice at 1400. (Jerry Simon, NY)

7433: SS/YL 5F groups in AM Voice at 0305 and 0410. (Lieb, IL)

7500: VNG, Lyndhurst, Australia with time signals at 0753. (Adams, WI)

7997: SAM 24127 on ground at Geneva on LSB Voice talking to SAM Command (not heard). Flight was passing time and fuel load info at 0430 for stops at Bonn, Brussels, Frankfurt, and Rome. SAM 24127 later reported it was airborne at 0515 with 16 passengers on board. Reader Griffith noted that this activity appeared to be a mission related to the evacuation of the hijacked hostages in Beirut. (Griffith, CO)

8000: VNG Lyndhurst, Australia with time tick at 0801. (Greg Harris, Philippine Islands) Ed. Note: This is probably in error. None of my reference aids show VNG to utilize 8000 kHz.

8467.4: D4A Sao Vincente, Cape Verde on CW with call tape at 2338. (Vendetti, NJ)

8473: A7D Qatar in CW with call tape at 2347. (Vendetti, NJ)

8501: ZLB Awarua, New Zealand in CW with call tape at 1050. (Harris, Philippines)

8502: PPL Belem, Brazil in CW with call tape at 2349. (Vendetti, NJ)

8532: LZV Varna, Bulgaria on CW with call tape at 2348. (Vendetti, NJ)

8569: XFM Manzanillo Colimas, Mexico in CW with call tape. (Vendetti, NJ)

8669: U Marker in CW at 0016. (Vendetti, NJ)

8678: PKF Makassar, Indonesia in CW with call tape at 1055. (Harris, Philippines)

8679: IQX Trieste, Italy in CW with call tape at 0013. (Vendetti, NJ)

8739: Wellington NZ Post Office RT with recorded message announcing "Test transmission of the New Zealand Post Office with Transmitter modulating from Wellington" at 0650. (Hall, WA)

8765.4: USCG Portsmouth, VA passing traffic to CG Cutter Dallas on USB Voice at 0321. (Griffith, CO)

8780.7: Flute type tones in USB from 2025-2030. (Vendetti, NJ)

9023: SULFATE from LETTER BOX in USB Voice with message in phonetics at 0113. (Lieb, IL)

9085: SS/YL 5F groups in AM Voice. Ended with Hello, Hello in English at 1238. (Pastrick, PA)

9222: EE/YL 3/2F groups in AM Voice at 0510. Example of groups 169, 50 129, 53 510, 44 304, 97 etc. (Griffith, CO)

10140.6: Callsigns 38, 71 DELTA ALPHA OSCAR, DELTA ALPHA SIERRA. Possible helicopter sound in background of transmissions from 71. USB Voice, SS at

1812. Mention of Quito (Ecuador) in operator chatter. (Hall, WA)

11535: SS/YL 4F groups at 0215. (Lieb, IL)

12552: 5F groups in CW at 0050. Zero cut as T. (Robert Margolis, IL)

12587: JOS Nagasaki, Japan DE JIPQ Japanese ship with CW callup at 0010. (Harris, Philippines)

12757: YQ15 Constanta, Romania in CW with traffic list at 2115. (Margolis, IL)

12659: 9VG Singapore in CW with call tape at 0009. (Harris, Philippines)

12662: 7TA8 Algiers, Algeria in CW with call tape at 1651. (Vendetti, NJ)

12709.2: VRT Hamilton, Bermuda on CW with call tape at 0131. (Vendetti, NJ)

12782: 9MB Penang, Malaysia in CW with call tape at 0011. (Harris, Philippines)

12845: HLO Seoul, S. Korea in CW with call tape at 0014. (Harris, Philippines)

12860: SVI Athens, Greece in CW with call tape at 0027. (Vendetti, NJ)

12879: WIC Tulsa, OK in CW with call tape at 0151. (Vendetti, NJ)

12880.5: SAG6 Goteborg, Sweden in CW with call tape. (Vendetti, NJ)

12926: HLW2 Seoul, S. Korea in CW with call tape at 0015. (Harris, Philippines)

12935: EAD4 Aranjuez, Spain in CW with call tape at 0157. (Vendetti, NJ)

12943.5: CUG San Miguel, Azores in CW with call tape at 1636. (Vendetti, NJ)

13014: N1J in QSO with J5V (both unidentified) in USB Voice at 1306. Mentioned Alligator Playground. (See entry for 6512)

13023: VPS Cape d'Aguilar, Hong Kong in CW with call tape at 0017. (Harris, Philippines)

13073: WLO, Mobile, AL in CW with call tape at 0215. (Michael Roslowski, NJ)

13478: 5F groups in CW at 1900. Zero cut as T. (Margolis, IL)

13558: Unidentified station in CW at 1142 sent T2 25705; at 1146 sent T3 694; at 1150 sent 21 28773; at 1154 sent T5T4 374; and at 1158 sent 94 97642. (Margolis, IL)

13815: KRH50, U.S. Embassy, London UK, "QRA" marker in CW at 1137. (Kneitel, NY)

16270: CW tape, DE Reuters Hong Kong Pix Cast at 0935. (Harris, Philippines)

16499: SS/YL in AM Voice with callup of 733 and counting 1-10 at 1705. (Hall, WA)

16828: Pioneer, a Russian general dry cargo ship sending coded WX in CW to Murmansk, USSR at 1639. (Margolis, IL)

16845.5: H2ZC M/V Aldimia, a Cypriot cargo ship carrying sugar from Cuba to India in CW at 1726. This ship once sailed under the Greek flag and was named Dimitris. (Margolis, IL)

16906: YIR Basrah Control, Iraq in CW with call tape at 2004. (Vendetti, NJ)

16916: WIC Tulsa, OK in CW with call tape at 2002. (Vendetti, NJ)

16998.5: JDC Choshi, Japan in CW with call tape at 2332. (Vendetti, NJ)

17008: TAH Istanbul, Turkey in CW with call tape at 1957. (Vendetti, NJ)

17015.3: D marker in CW at 1958. Possibly Soviet Navy. (Vendetti, NJ)

17021: UFM3 Nevelsk, USSR in CW with call tape at 0930. (Harris, Philippines)

17030: GYC6 Whitehall (London) Naval Radio, England in CW with call tape at 0120. (Vendetti, NJ)

17239.1: YL by the name of Jeanne Marie, operator at WAH St. Thomas in the Virgin Islands heard on USB Voice with traffic list at 2300. Received QSL card, a letter and frequency schedules from her 13 days after reporting contact. (Margolis, IL)

18145: Diplomatic traffic in French being sent in CW at 1925 by an Algerian Embassy at an unidentified location. (Margolis, IL)

22352.5: PPR Rio de Janeiro, Brazil in CW with call tape at 1923. (Vendetti, NJ)

22376: IAR Rome, Italy in CW with call tape at 2009. (Vendetti, NJ)

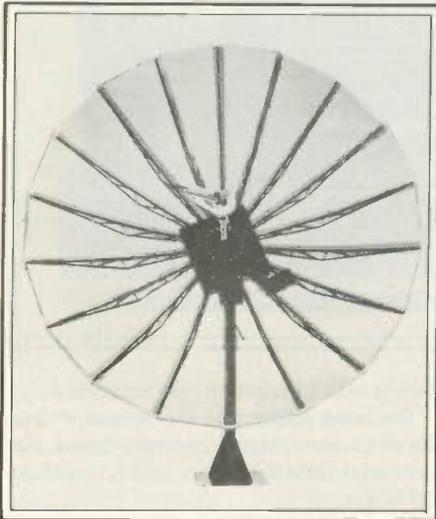
28210: 3B8MS Port Louis, Mauritius. Beacon at 0300. (Gil Patton, FL)

28262: VK2WI Parramatta, NSW, Australia. Beacon at 2240. (Patton, FL)

29500: USB Voice and RTTY activity appearing to be Soviet Military operations heard during period of 1406-1414. (R. Fellows, Frankfurt, West Germany)

SATELLITE VIEW

INSIDE THE WORLD OF TVRO EARTH STATIONS



Satellite TV Antennas

Hero Communications, Inc. announced a five-year guarantee on all of its satellite TV antennas. The guarantee covers the entire parabolic aluminum reflector or signal-receiving portion of Hero's 32, 25, 20, 16, 13, 10, and 7-foot antennas.

Robert Behar, president of Hero, said the move is designed to dramatize the performance record of the company's antennas. "We have not had one failure in more than five years of making and installing antennas worldwide," he said. "We feel our design, engineering, materials, and construction produce products that last. An earth station is a major investment and we want buyers to have total assurance that they can depend on our products."

Hero began in 1978 as a designer/producer of commercial antennas capable of performing under demanding conditions around the globe. Its first dish was a 20-footer and its early line ranged from 16 to 32-feet in diameter. Hero moved strongly into the home or "backyard" market in 1984 when it introduced 10 and 13-foot antennas. Hero's newest dish, the Super-7, is a seven footer with both C-band (4 GHz) and Ku-band (12 GHz) capability.

Contact Hero Communications, 2470 West 8th Ave., Hialeah, FL 33010.

Satellite Receiver Capable Of Receiving Both Ku-Band And C-Band Signals

The Panasonic Industrial Company introduced a satellite receiver capable of receiving both Ku-band and C-band signals. The rugged Ku/C-6000 has ten-channel capacity and features front panel push buttons for instant selection of channels.

"We have designed the Ku/C-6000 for teleconferencing, SMATV systems, and industrial applications," said Henry Hammer-



stein, product manager for Panasonic's satellite systems. "It's an attractive but durable satellite receiver and it will have a positive impact in the marketplace."

Panasonic's satellite receiver has ten potentiometers to set the individual frequency plan. The potentiometers are accessible via a trap door in the topcover. Simultaneous output of two audio subcarriers is possible with separate "A"-band and "B"-band audio tuning controls with "A" subcarrier wide/narrow IF bandwidth selection.

The Ku/C-6000 includes front panel features such as fine tuning control, AFC on/off push button, and LED signal strength indicator.

The rear panel layout includes switches for video polarity, channel 3/4 output, and video scan. The video baseband outputs have an adjustable level control on the rear panel. Other rear panel terminals include: IF IN; Baseband out; video out; audio in;

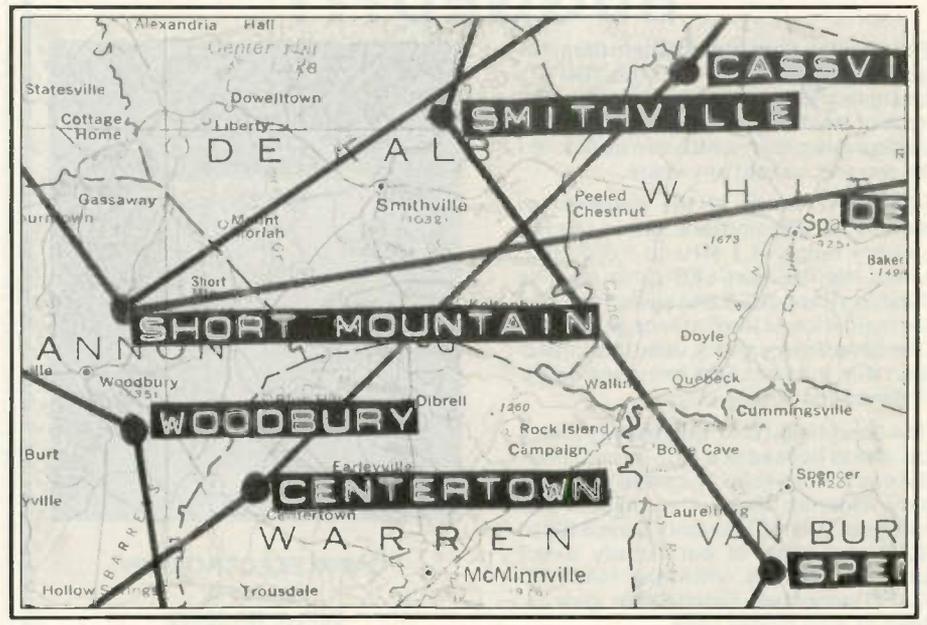
video in; TV out; and AGC out. The Ku/C-6000 is fully compatible with the Panasonic Ku-band LNB-25P/PW and the C-band CI-LNB-100/85 low noise block down converters.

Panasonic is located at 1 Panasonic Way, Secaucus, NJ 07094.

Identify Terrestrial Interference

Data and maps of microwave routes for each state are available from Microwave Filter Company, Inc. Installers of TVRO systems may purchase the information to identify sources of interference that may hamper antenna reception.

The data includes the transmit and receive site for each microwave path in a specified state, frequencies authorized for each path, path length in miles, and azimuth of path. Also provided, for each transmit site, are the FCC call letters, latitude and





longitude, county, closest city, transmitter height, user of the link and a short location description. Maps are available for each state. Texas, Florida and California are broken into two maps each because of size.

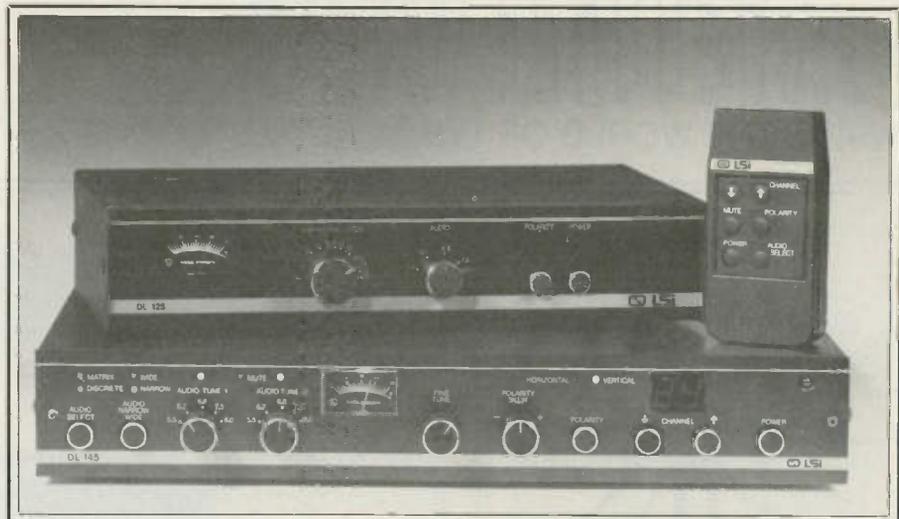
Price for data is \$125 and the map is an additional \$100. Delivery of data is two weeks. Allow a maximum of six weeks for map arrival. For more information contact Emily Bostick at Microwave Filter Company, Inc., 6743 Kinne Street, East Syracuse, New York 13057.

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CIRCLE 63 ON READER SERVICE CARD



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tioning with convenient remote control.

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The unit's microprocessor memory also allows coded parental control. Using the lock function, access to specific satellites may be restricted, or the antenna may be locked onto a particular satellite.

Outdoor components of the Satscan™ drive system include a heavy-duty actuator drive with low 36-volt DC operation, protected by a weatherproof expandable jack sleeve and motor boot. Automatic shutoff prevents motor wear by stopping attempted movement beyond the range of the arc.

The Channel Master Model 6254 Programmable Satscan™ retails for \$649.95, and is available from distributors.

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The DL 145 comes complete with matrix and discrete stereo, a unique meter system that measures signal quality directly from the demodulated signal, Polarotor 1 interface with skewing, and many other features, both large and small, that make it complete.

LSI Technologies is located at 340A West Trinity Lane, Nashville, TN 37207. **PC**

Mailbag (from page 6)

these "adjustments," she does strongly object to our artist painting out the eagle and 2 slogans ("Death Before Dishonor" and "Compliments Of The 7th Fleet") that were applied to her right forearm at Pinky's Tattoo Parlour in Hong Kong. Other than these very trivial modifications, Alice looks almost exactly the way she has appeared in our photos. See for yourself in the unretouched photo here. And, by the way Neil, if I were you, I'd be careful about how much kidding you give this little lady. For 12 years running, she's been the light-heavyweight wrestling champ of the Massachusetts Women's Correctional Institution Honor Farm. Alice wonders how you guessed that she always knew the answers in physics class. —Editor

Gas He Was Monitoring!

In the April '85 issue of POP'COMM there was a considerable number of frequencies shown for toxic gas production and storage facilities across the nation. Living in the shadow of just such a facility myself, I carefully saved this information for future use. On 11 August, 1985, there was a toxic chemical leak of aldicarb oxime and another toxic gas from the Union Carbide plant here. About 140 nearby residents went to hospitals and thousands more were trapped indoors until the fumes dissipated an hour and a half later. Because of the information obtained from POP'COMM, I was aware of this leak long before most of my neighbors, and had the inside track on efforts to handle the situation by the company, public safety agencies, and emergency medical services. Thank you, POP'COMM, for being there at the right time with the right information!

R.P.W.
Institute, WV

Who's Calling?

Does every radio transmitter in the United States have a callsign? Are callsigns normally reissued? Are they ever duplicated, that is, issued simultaneously to two or more different stations?

R. Moreau
Canandaigua, NY

Virtually all FCC licensed transmitters are assigned a callsign, although not all are required to identify by announcing that callsign, such as transmitters aboard artificial satellites. Another example would be airliners; they are permitted to identify by carrier name and flight number. Transmitters operated by agencies of the federal government sometimes have callsigns similar to those assigned by the FCC, although very often they don't have callsigns. Many military stations utilize "tactical identifiers" (code names or numbers) instead of actual callsigns. The FCC normally reissues callsigns when they become available as licenses expire, although not in all instances. Marine radio-telephone station callsigns don't appear to be given again once they expire. Ham station callsigns are no longer being reissued either, and there may well be other similar examples. The FCC does seem to duplicate



Here's the same callsign issued to two different licensees!

callsigns from time to time and there were numerous examples when the license computer erroneously issued double callsigns to thousands of CB Radio licensees. Strangely, some Amateur Radio Service callsigns are routinely duplicated when they are also issued to aeronautical mobile stations. In our photo, you can see an example of this. N6ND is the aircraft's FAA registration number and also its FCC callsign. However, the FCC has also issued the call N6ND to a Ham operator in Santee, California. —Editor

A Hell Of A Shreiber

What is a Hellshreiber? It is apparently some type of teletype printer. Although I've seen the Hellshreiber mentioned in several books, POP'COMM has never run any frequencies or transmission skeds for this. How

can I monitor these transmissions?

Evan O'Hanlon
Glastonbury, CT

The Hellshreiber was a German invention that offered a hard-copy printout of text material. Although in limited use in the late 1930's, it really came into its own during WWII when the Dr. Goebbels used Hellshreibers to transmit endless reams of propaganda to Nazi newspapers and broadcasters throughout the Fatherland and the occupied nations. Often these transmissions were counterfeited by British Intelligence, which took delight in confusing the Nazi press with stories that were totally or just slightly out of kilter with Dr. Goebbels version. Unlike modern Telex printers, the Hellshreiber printer didn't use regular letters and numerals. Instead, the device relied upon a cryptic series of vertical lines of varying length. With training, practice, and some imagination, a person could reconstruct those lines into letters and numbers. The system was eventually surpassed by other methods of text transmission and, with the exception of some systems rumored to be used in the PRC, probably has been obsolete for many years. If any readers know of present day Hellshreiber systems, please pass along frequencies and skeds.

While it might be interesting to hear what it sounded like, you'd need a Hellshreiber machine along with information on the bizarre printout in order to read the messages. We have never seen a Hellshreiber printer offered for sale. —Editor

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CIRCLE 152 ON READER SERVICE CARD

Beaming In (from page 4)

cisions on which stations were forbidden became the law of the land.

We think our readers are fully capable of deciding which stations they want to hear and which (for whatever reasons) they'd like to pass by. Moreover, it is highly unlikely that a listener or publication boycott is capable of forcing any change in a broadcaster's QSL'ing policies, much less a nation's actions. If the boycott of the 1980 Summer Olympic Games in the USSR produced no tangible "results," what value might be expected from a listener boycott?

And how might a line be drawn as to which stations or nations should or shouldn't be boycotted? Human rights violations of varying severity exist in dozens of nations, and more than a few nations have military forces occupying other nations where some folks think they definitely don't belong. Still other nations have totalitarian governments that have gained control by means alien and offensive to virtually all peoples of democratic nations.

I might note that, in at least a few overseas nations, our own country's policies in some areas aren't considered as being without blemish. And neither is our track record in the area of human rights (commencing with our treatment—past and present—of Native Americans). Would our boycotts serve only to bring about similar reactions by the DX media and listeners overseas—with the United States on the receiving end of broadcast and Ham boycotts?

This is a can of peas that isn't going to be very appetizing once it's opened. Those peas are going to roll all over the place and into some areas that folks aren't going to like very much.

As for the idea of boycotting broadcasters whose QSL'ing policies strike certain DX'ers as being unworthy, let's consider several things. Despite what some DX fans seem to think, the primary purpose of broadcasting is not to provide a reason to send out QSL's. QSL's are sent out as a courtesy gesture by some stations that have the inclination to publicize themselves and/or add to the enjoyment of the DX'ing hobby. No station is obligated to QSL and, frankly, I'm surprised at the number of stations that are willing to devote the time, effort, and expense to doing so.

Broadcasters have told me that many requests for QSL's are either illegible, vague, incomplete, incorrect, or in languages that they aren't prepared to translate. Even the reports that contain intricate details of signal quality are of little practical value since the stations already have all of the information on their coverage that they could ever hope to use. In the one area where stations *might* be able to get real value—comments about listener interest in and satisfaction with the station's programs—most reception reports are valueless since DX listeners seldom offer

comments on such matters, perhaps not even understanding the programs because of language barriers! My own experience has shown that there's a better chance for a QSL from a difficult station when the report is 90% filled with thoughts on their programs and only 10% logging and signal quality technical data.

Broadcasters are quick to point out that they are aware that the DX hobbyist seeking a QSL is usually not a regular member of their audience and may not even understand the language(s) used in their programming. Nevertheless, many stations will go to considerable expense to accommodate such itinerant hobbyists and hope that (providing no language barrier exists) they may become regular listeners in the future. Maintaining a QSL'ing policy includes the expense of printing QSL's; hiring a staff to process the incoming reports and check them against the station log; making out the QSL's, and then (often) springing for the very high costs of overseas postage.

Some shortwave broadcasters would like to be attentive to QSL requests but they don't have the resources to do so. Others do the best they can, even though their best may not be even nearly good enough to please one and all.

Still other commercial and non-commercial stations are interested in reaching only a certain localized audience. It is a matter of no concern at all that listeners outside of their target audience should be placated with QSL's. For example, let us say that you monitor a low-powered regional broadcaster such as Peru's OBX7D, Radio El Sol de los Andes (400 watts on 3230 kHz from a remote Andes town). This reception may well be something you'll be telling your grandchildren about 40 years from now. Unfortunately the operators of OBX7D are little interested in incurring expenses in order to curry your good will and they probably couldn't care less that you heard them in Waco, Wisconsin, Winnipeg, or wherever. Hence only a slim chance of getting a QSL from this prize catch, although part of the fun and mystery of the DX hobby is knowing that a few DX'ers were able to get one—and maybe you'll be next!

After all is said and done, what real challenge or feeling of accomplishment is there to receive a QSL from the likes of Radio Prague, 4VEH, Kol Israel, Deutsche Welle, Radio Moscow and others that respond to QSL requests with flying colors? If you're into QSL's, then why not see the normally unreliable or non-QSL'ers as the stations to track down and capture? Dexter's *World Broadcast Station Address Book* rates the QSL'ing policies of about 1,000 broadcasters, many receive only a C, D, or F grade. Those are the stations whose rare QSL's spice up the hobby!

Filter such stations out of our listings? Boycott them? *Never!* These stations aren't poor sports, they *are* the sport itself!

Just imagine what might happen if we went along with these suggested blacklist and boycott schemes. Stations would be

omitted from mention in our pages if they (or their host nation) presented cultural, religious, or political philosophies that irritated anybody. In addition, every time some reader wrote to say that a particular broadcaster's QSL'ing policies were less than ideal, that station would also be deleted, ditched, and dumped.

Under those ground rules, *POP'COMM* would shortly contain a lot of blank pages! And with the stations being boycotted by listeners, all of us could mothball our communications receivers and catch up on our household chores.

If tradition can be relied upon as being of any value in establishing a precedent, during WW II all DX publications and club bulletins regularly ran the shortwave schedules of the Axis powers and nobody demanded that the listings be censored. There was little fear that North American listeners might become fascists from tuning in those broadcasts. Neither was there any hope that the enemy would surrender if publications would only stop printing their broadcast schedules or ask their readers to stop listening. And, let's face it, during the war years the QSL'ing policies of stations in Axis nations were no better than the worst of today's non-QSL'ers!

Really, let's try to keep communications truly a hobby of international friendship. Leave boycotts, sanctions, blacklists, censorship and pressure matters to the professionals, politicians, and diplomats. With their efforts, plus your own involvement in human rights organizations, and maybe a dash of prayer, the year ahead may bring about change for the better in this mixed-up world of ours.

Focus in on the idea that the term *DX listening* is self-descriptive—it means listening for distant broadcasts and communications. Trying to make it mean political pressure distorts it. And also keep in mind that hearing the stations is the true goal, not receiving QSL cards. QSL's merely add to the excitement and enjoyment. Anything that interferes with listening, or with the propagation of information of frequency and schedule information, is the antithesis of what DX'ing is (supposed to be) all about.

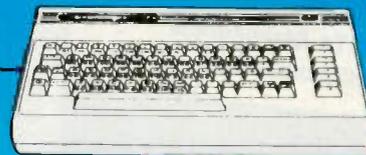
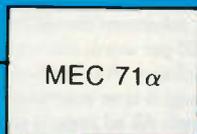
Before The Year Ends

Special thanks to Gordon Williams (of ABC News) for the very kind comments he made about *POP'COMM* in his "Mr. Hi Tech" column in a recent issue of *Family Weekly*.

A rousing three cheers to the American Shortwave Listeners Club upon the occasion of their anniversary. The ASWLC is an example of a fine organization that has devoted several decades to being of significant benefit to the DX hobby. Stew and the rest of the ASWLC gang must be very proud of the job they've done. So are all of us here at *POP'COMM*. We wish the ASWLC many more successful years.

And, from the *POP'COMM* staff, best wishes for the holidays! May the gift you find be even more than you had wanted. **PC**

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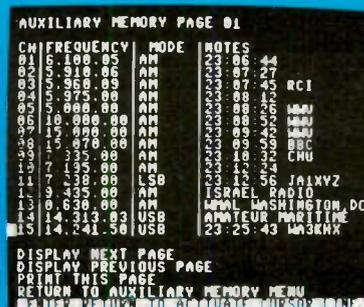
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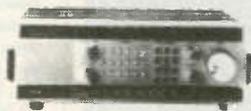
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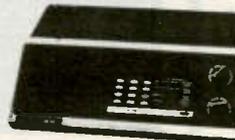
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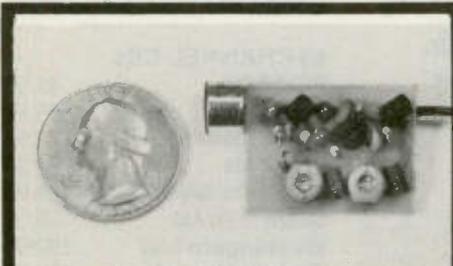
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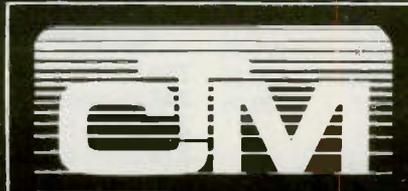


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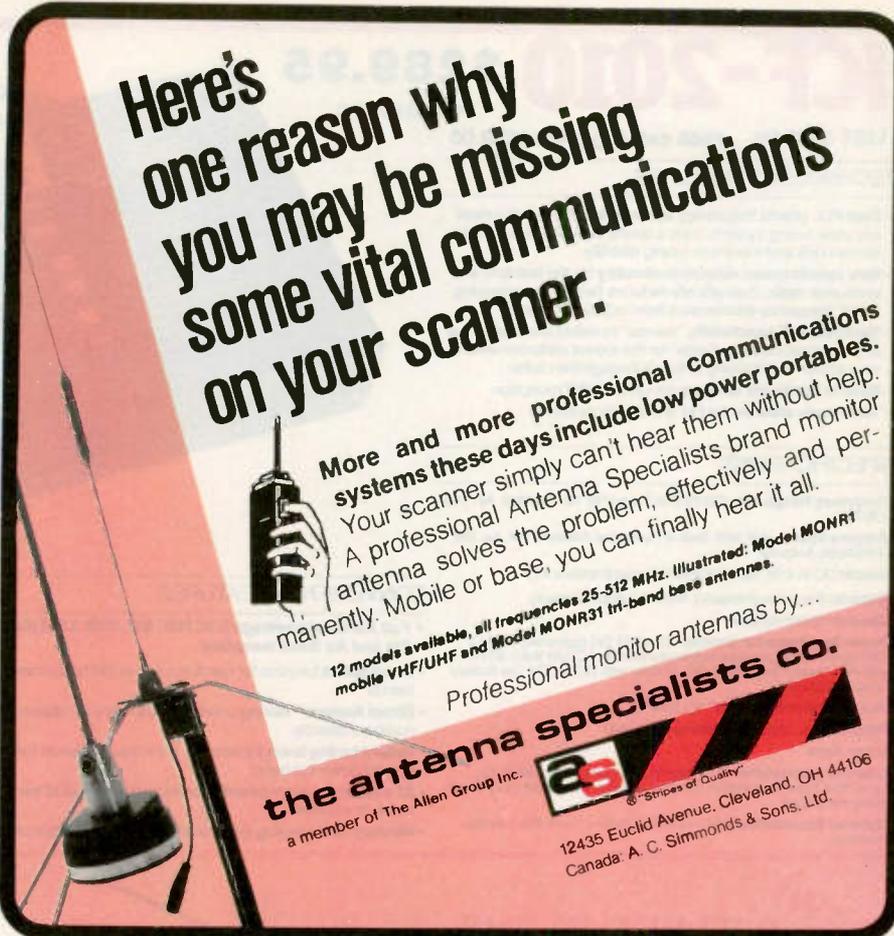
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