Support Your MT Advertisers

...SPECIAL GROVE SUMMER SALE! See Pp.17-18

$2.00

MONITORING TIMES

Volume 4-Number 9 BRASSTOWN, NORTH CAROLINA 28902 September, 1985

SECRET EARS DOWN UNDER...

by David O'Brien

Hidden away behind a pine forest among the sand dunes lining the southwest coast of New Zealand's North Island is a small stretch of land where pine trees have been replaced by sophisticated radio antennas.

Driving along a narrow coastal road you pass through a small community of beach houses, populated mainly by retired folk, then further along the road you will come across a turn-off marked by a sign, "Ministry of Defense. Communications Unit. Trespassers will be prosecuted."

In this country where the average citizen takes notice of such things, that simple sign has, for some time, preserved the existence of New Zealand's most secret military installation, the Defense Communications Unit located at Tangimoana ("Tangy-moh-ah-nar").

Tangimoana consists of a squat single-story building crouched behind pine-tree-covered dunes about eight miles off State Highway One and just south of the major air force base located at Ohakea ("Oh-haa-key-ah"). The main area is ringed by a high security fence with a single gate for access. Wired to that fence is a sign found on most New Zealand defense installations which reads, in part:

"Defense Area. No admittance except on business. Any person proceeding past this notice or remaining in this defense area is subject to restrictions imposed under part IV of the Defense regulations 1972 and may at the discretion of the ... or of any authorized serviceman be detained and searched, both to his person and as to any vehicle, ship, boat, aircraft, receptacle, parcel or chattel in his possession or control. By order of Minister of Defense."

An intercom unit fixed beside the gate is the only sign of life except for civilian-clothed personnel who arrive and depart in a mini-bus for shift changes. They maintain an extremely low profile and are forbidden even to admit they work at the installation.

Any persistent questions about the role of Tangimoana or the personnel will, at best, result in a resounding silence. At worst, the questioner could receive a visit from a member of New Zealand's Security Intelligence Service (SIS), the local "spook" organization charged with preserving the nation's secrets.

The whole facility is run by the Government Communications Security Bureau (GCSB), a little-known organization operating separately from the Defense Communications Network. Located on an upper floor of a Defense Department high-rise building in Wellington, New Zealand's capital city, their desire for secrecy extends to being unlisted both on the building's directory board and in the Defense Department's internal phone directory.

WHAT IS THE GSB AND WHAT DOES IT DO?

The GCSB was established in 1977 to ensure the security of official New Zealand communications and to monitor signals from the southwest Pacific region.

Towering over the site like construction site cranes are two rotary log periodic arrays (RLPA), highly sensitive listening antennas which can be pointed in any direction and also used for triangulation in direction finding techniques.

Away from the RLPA's are four vertical masts, each about 160 feet high, supporting a spiderweb-like array of wires.

The other major antenna layout is an arrangement of masts forming a circularly-disposed antenna array

British-made RACAL RA 1784 synthesized receiver

(CDAA), a system used to detect very distant and faint signals.

This major league monitoring setup is similar to other listening bases in many parts of the world. The CDAA and RLPA's are well-known to some Monitoring Times readers to be sensitive to a wide range of frequencies across the HF band.

The CDAA system is similar to that used at Misawa in Northern Japan to monitor the Soviet jet fighter conversations when the Korean airliner (KAL 007) was shot down. CDAA systems are also known to be located at Pearce, Darwin and Cabarlah, Queensland, in Australia, and at Wahiawa in Hawaii.

Tangimoana is said to be part of an international monitoring network established under an agreement signed in 1947 by the USA, Britain, Canada, Australia, and New Zealand. Other countries are also involved under the Ocean Surveillance Information System (OSIS), described to a congressional committee as "a worldwide system to correlate, evaluate, analyze, and disseminate information on targets on, under, and above the oceans."

Most of the OSIS material comes from underwater sonar arrays, satellite surveillance, high frequency direction finding, signals monitoring stations, plus aircraft, ship and submarine sensing systems.

New Zealand Air Force P3 Orion aircraft are well-known to be actively engaged in anti-submarine patrols and sonar surveillance across the South Pacific, while the Navy have been engaged in highly classified studies on underwater sound.

Other contributors to OSIS include America's National Security Agency (NSA), the United Kingdom Government Communications HQ

Cont'd on p.4

TABLE OF CONTENTS

www.americanradiohistory.com

MONITORING TIMES

Bob Grove.....Editor

Judy Grove.....Publisher & Advertising Manager
Rachel Thomas.....Production
Mitzi McCoy.....Distribution
Joan Fuller.....Subscription Services

Monitoring Times is published by Grove Enterprises, Inc., 140 Dog Branch Road, Brasstown, NC 28902. Phone 704-837-9200.Copyright 1985. Subscription rate: $12 for one year, $22 for two years, $31 for three years. Canada and Mexico add $2 per year. Foreign subscribers: surface mail add $11 per year or air mail add $27 per year.

FROM THE EDITOR

The Changing Complexion of Our Hobby

While there are a sizable number of "professionals" (government agents, law enforcement officers, electronics countermeasures personnel, land mobile engineers, etc.) who read MT, the majority of us who monthly peruse the columns of our favorite periodical are either short-wave listeners or scanner monitors.

We recently polled our readership to determine what a typical cross-section reveals and will share that information after we are finished tallying responses and analyzing the data.

Just where is radio communications going? Will hobby grade equipment keep pace? Keep in mind that ours is a relatively small market, nothing like the video and home computer target. And with the economy generally down, there is little to stimulate ambitious speculative investment among manufacturers for new product development.

And what will those new receivers have to contend with? Higher frequencies to be sure. Satellite communication is the byword these days as more and more of the lower frequency and landline users switch over.

One dominating theme which is waiting to explode in the VHF/UHF scanner bands is amplitude compandered sideband--ACSB, a form of single sideband which will require entirely different circuitry and controls on a new breed of scanner.

With the cellular radio band (806-960 MHz) enjoying astronomical growth in major metropolitan areas, not only will scanners have to adopt that band as a matter of routine, but scanner antennas will have to be designed with that frequency range in mind. It is far enough removed from conventional VHF/UHF wavelengths that normal scanner antennas, unless specially designed, will not work well at those frequencies.

The coming years should see some interesting evolution in consumer radio electronics and, of course, MT will be there to tell you about it first.

NEED TECHNICAL HELP?

We are always pleased to offer assistance to our readers who need more information about our products and services. All we ask is that you include a self-addressed stamped envelope to help offset our cost of return postage.

If you would like to speak with Bob Grove directly, call 1-704-837-9200 Monday through Friday, 8AM-5PM.

THE FCC'S INTRUDER WATCH PROGRAM ...and how you can help

One of the most serious threats to safety on the high seas and in the air is the growing interference from unauthorized radio signals from both broadcasters and utilities. The Federal Communications Commission, in cooperation with the International Frequency Registration Board (IFRB) of the International Telecommunications Commission (ITU), is preparing a lengthy documentation to formally protest these intruders.

In a recent meeting at MT headquarters, editor Bob Grove met with two FCC officials to discuss the possibility of a "grass roots" support by qualified listeners who could provide accurate loggings of these incidents which could be utilized by the commission in their on-going investigation of these incidents.

Since the protection of life is the first responsibility for communications in the maritime and aeronautical services, this is the area of specific interest to FCC enforcement efforts. Short-wave listeners who would like to help rid the airwaves of these violators who interfere with ligitimate communications are invited to contact us with details of your equipment and monitoring skills as well as hours available for monitoring and the telephone number at which you can be reached.

Address your letter to:

MT INTRUDER WATCH PROGRAM
P.O. Box 98
Brasstown, NC 28902

The sample loggings below are actual FCC monitoring station reports from April 1985 showing typical entries from the Ferndale, Washington, and Powder Springs, Georgia, installations.

Moment de l'observation / Time of Observation / Momento de la Observación			Fréquence mesurée / Frequency measured / Frecuencia medida	Identification / Identification / Identificación	Classe de station / Class of station / Clase de estación	Classe d'émission / Class of emission / Clase de emisión	Relèvement / Bearing / Marcación	Remarques / Remarks / Observaciones
Date / Date / Fecha	Heures / Hours / Horas (UTC)							
	De/From	A/To	kHz					
1.1	1.2	1.3	2	3	4	5	6	7
08	0200	2145	8828.7 1000Hz FSK	?	FX	F1B		URS DF Fix- 63N x 174E Anadyr,Urs
09	1600	1930	"		"	"		"
10	1830		"		"	"		"
11	1756		"		"	"		"
08	0852		6665.0	Radio Peijing	BC	A3E		CHN Dual with 9064 kHz
10	1105		"	"	"	"		"
12	1410		"	"	"	"		"
15	1655		"	"	"	"		"
08	0951		6539.5	Radio Pyongyang	BC	A3E	311	KRE
14	0930	1005	"	"	"	"	"	"
08	1100		6260.0	?	BC	A3E		CHN DF Fix- 36N x 103E
09	1100		"		"	"		"
08	1346		4273.0	?	BC	A3E	311	KRE
09	1238		"		"	"	"	"
08	1446		4329.99	?	BC	A3E		CHN 37N x 122E
08	1050		6560.0	"IG" (jammer)	FX	AXX		URS DF Fix- Khabarovsk
10	1035		6560.0	Radio Beijing	BC	A3E		CHN
10	1123		8925 (varies)	Radio Continente	BC	A3E		PRU

www.americanradiohistory.com

FCC cont'd

1.1	1.2	1.3	2	3	4	5	6	7
11	0630		6252.0	Vatican Radio	BC	A3E		CVA
18	2207		6933.0	Padio Peijing	BC	A3E		CHN
19	2244		9944.97	Radio Beijing	BC	A3E		CHN

To interpret the loggings, they are in order of date, time, frequency, identification, class of station, mode of emission, and location or bearing of intruder. For example, the first entry shows that on April 8, 1985, from 0200-2145 UTC on 8828.7 kHz, a 1000 Hz frequency-shift keying (RTTY) fixed station was tentatively placed in Anadyr, USSR, by an RDF coordinated fix giving coordinates of 63°N and 174°E.

In general, violators are typically broadcasters from Communist bloc countries, most notably China, Korea, East Germany, Vietnam, Albania, and the USSR. Maritime frequency bands which have been penetrated are 2170-2194, 4063-4438, 6200-6525, 8195-8815, 12330-13200, 16460-17360, 22000-22720, and 25070-25110 kHz.

Aeronautical bands which have been penetrated are 2850-3025, 4650-4700, 5450-5680, 6525-6685, 8815-8965, 10005-10100, 11275-11400, 17900-17970, and 21924-22000 kHz.

Additionally, Soviet bloc broadcasters are found throughout the non-broadcasting spectrum as attested to by the omnipresent Communist line heard every evening in and around the amateur 40 meter band outside of the internationally-allocated 7100-7300 kHz broadcast band.

MT headquarters will maintain a master file of official loggings as coordinated by the IFRB for reference. Duplicate sets of data will be made available to participating MT monitors for the cost of postage as they are accumulated and updated.

MT wishes to assure our readers that this effort is not an attempt to "tattle" on occasional infractions or to form an elite "gestapo", but to serve as a sincere effort to assist the only legitimate monitoring agency we have, the FCC, in what is becoming an increasingly serious problem.

There is no pay, there is no glory, there is no reimbursement for postage, time or telephone calls. But there is an enormous amount of satisfaction in being able to say, "I didn't just complain--I did something"!

Our efforts may work or they may not, but unless we try we will never know. Let's hear from our shortwave enthusiasts and start the project. ●

FCC Seizes $1 Million in Illegal Computers

Wednesday, July 24 at 8:30 AM the U.S. Marshals Service at the request of the FCC siezed an estimated one million dollars worth of computing equipment which was scheduled to be sold by auction at Seequa Computer Corp, 8305 Telegraph Rd., Odenton, Maryland.

The equipment siezed did not comply with FCC rules and regulations concerning incidental radiation (RFI) which limits the potential for radio interference from computing devices.

Federal law prohibits the manufacture and marketing of such non-compliant electronic equipment Seequa had advertised the sale nationally and was scheduled to begin the auction at 10 AM.

The investigation into illegal marketing by Seequa has been on-going for ten months. The FCC Denver field office first issued a citation (warning) to Seequa in October 1984 for marketing its Chameleon model computer without having followed FCC certification rules. An administrative forfeiture for $2000 was issued to Seequa in early 1985 for continuing to market the computer.

Although Seequa eventually received a Grant of Equipment Authorization from the FCC, the models seized did not comply with the requirement for that grant. In addition, recent measurements made by the FCC's Office of Science and Technology Laboratory (which issued the grant) showed the equipment being marketed by Seequa radiated signals well in excess of that permitted by commission regulations.

The search warrant allowing siezure of the equipment was issued as a result of a request through the U.S. Attorney's office in Baltimore. Personnel from the FCC's Baltimore district office, the FCC Laboratory, and the FCC Field Operations Bureau headquarters participated in the search and siezure.

Viewpoint

REMINGTON NUMBERS--CORRECTIONS AND ADDITIONS

R.F. Heard, author of July's lead article on the Remington numbers broadcasts, has contributed the following corrections and updates on his article:

Add 12156 to the list with 4307, 4670, etc.

Also insert:
1300 12156/14421 Th EE3/2

At 2100, 11532/16450 should be ThSa, not W.

At 0600, it should be 8418/9074.

At the end, 230 should be 2300.

With these corrections, the list remains the most complete ever published.

HELPING THE FCC?

I have been reading, with some amusement, the various articles concerning the possibility of yourself and the FCC becoming buddies in law enforcement of the airwaves. I note that the FCC didn't come knocking on your door, asking for assistance. It was your idea.

At any rate, I have been thinking about the various implications involved. I think you are underestimating the resources that the FCC has at hand. They are very quick to act against any and all illegal transmissions and emissions that cause interference to legitimate licensed services. If you doubt this, try jamming a MARS frequency for an hour or so--or perhaps a maritime calling frequency--you'll find them at your doorstep within days.

The point I'd like to make here is simple: They are well equiped to do the job without our help. And the idea of 10,000 vigilant monitors watching the sky (as it were) reminds me of Nazi Germany or the Soviet KGB. After all, this is supposed to be a free country, right?

Now, don't get me wrong. I think that interference to legitimate services is wrong and shouldn't occur. But the FCC has that situation pretty well in hand. They receive thousands of complaints a month and follow up on the serious ones. Obviously, interference to HF aero bands can cause extreme danger to lives and property. These violations should be (and are) eliminated.

I am confident that the federal government does what it feels necessary to maintain some semblance of order. Why add to the pile of paper in Washington any more than is occurring already? Because they did not request assistance, I fear your efforts will wind up in the round file, or all the contributors names on a list of some sort in D.C.

Count me out!

Don Mussell
Whitesburg, KY

APPLAUSE FOR AVIATION COLUMN

Having spent my entire working career of 40 years in aircraft maintenance, avionics and flight operations, I find Jean Baker's "Plane Talk" column excellent and enjoy it very much. I am very glad to see an aircraft monitoring column as a regular feature of Monitoring Times. Unfortunately aviation frequently takes a back seat.

Jean Baker's first two columns of "Plane Talk" were well written, informative and quite comprehensive. I look forward to future aviation columns by Jean Baker, be they on VHF, UHF or HF...Keep up the good work.

Herbert Gardiner
Honolulu, Hawaii

FEMA Guilty of "Prestige Classification"?

Noted columnist Jack Anderson recently pointed out the absurdity of the classification system utilized by government agencies. While the Department of Defense classifies only one percent of their classified material as "Top Secret", and the Central Intelligence Agency so classifies five percent, FEMA, and outgrowth of the old Civil Defense program, classifies as "Top Secret" a whopping thirty percent of their documents!

The House subcommittee on government information has asked the Information Security Oversight Office to investigate "this apparent disproportionate use of 'top secret' at FEMA."

Thanks to MT reader Jay Norton for passing this interesting item on to fellow readers.

www.americanradiohistory.com

SECRET EARS cont'd from p.1

(GCHQ), the Australian Defense Signals Directorate (DSD), and also the Canadian equivalent of these organizations.

Rumor says data from Tangimoana is passed to the DSD station at Watsonia near Melbourne, Australia, then through the DSCS3 eastern Pacific satellite to the U.S. Fleet Ocean Surveillance Center (FOSIC) at Makalapa, Hawaii, for distribution. This, however, has to be speculation and is not likely to be the only method for passing on information gained by the facility as a high level of encrypted traffic passes through New Zealand's defense-controlled transmitting stations.

Further speculation could suggest several areas of interest for the Tangimoana band-watchers including all shipping activity in the Central and South Pacific; activities of various countries in Antarctica; internal communications of South Pacific countries; advance warning of tests at the French nuclear-testing site at Mururoa Atoll; Indonesian military activity in East Timor and Papua New Guinea; and Soviet naval activity in the Pacific region.

Targets could be even further afield; New Zealanders with off-the-shelf equipment can routinely monitor HF traffic from Clark AFB in the Philippines and Andrews AFB in Maryland. With the equipment available at Tangimoana the possibilities are endless.

AN SWL'S DREAM MACHINE

Published material on the technical aspects of the antenna systems used at Tangimoana suggest the facility can also be remotely operated for direction finding operations with stations in various locations used in the triangulation being activated by a telephone or HF radio link.

Each station can be instantly tuned to a specified frequency and the results obtained on a central computer within one second. Often the computer results are shown on a visual display with a map or chart overlay giving the operator an exact location of the signal source.

The RLPA's installed at Tangimoana look like construction site cranes with antenna wires slung between three horizontal arms. A DXer's dream machine, but too large to replace the average dipole slung between the house and back fence!

The CDAA array is made up of a circle (490 feet) or 48 equally spaced masts (40 feet high) which, in turn, surrounds a circle (165 feet) of 24 20-feet-high masts (these measurements are approximate only). This appears similar to a system used by Australian Department of Communications monitoring stations known as a Modified Baldock-Type Array which uses nine 500-foot radial wires from a 100 foot tower. Each wire is terminated with 500 ohms to a complementary ground radial system and ground mat for HF receiving and direction finding.

The wires are spaced at 40 degree intervals, each feeding into a matching transformer at the top of the tower and then via coaxial cable--one for each wire--to the receiving equipment. It is, in effect, a series of highly directional longwires (Beverage antennas) which can be used singly or switched together in various combinations to form vee-antennas.

The four 160-foot masts supporting a vertical spiderweb-like array of wires is likely to be an inverted conical antenna system used for critical field-strength measurement of signals. This inverted cone of wires is normally suspended over an underground earth mat. The antenna wires are gathered at the base and fed to coaxial cable.

The inverted cone antenna, apart from being calibrated for field-strength measuring, could also be used as a good omnidirectional antenna. The Australian DOC uses a similar construction, known as the ITU Inverted Cone Antenna, comprised of four 75-foot towers. The cone is constructed from 16 wires, 25 feet in diameter at the top, and dropping to the coaxial cable terminated between the cone and earth.

No information is available on the type of receivers used at Tangimoana, but it is understood that the British-made RACAL is among them. It is possible that the contractor responsible for some equipment, including antenna systems, was the Plessey organization, a well-known supplier of defense communications equipment.

The existence of Tangimoana has come under fire from the anti-nuclear lobby who maintain that such an installation contributes to making New Zealand a nuclear target by supplying the U.S. with intelligence data. Many of the same voices are raised against any U.S. activity, a point noted by news columnists who have also pointed out that New Zealand's Prime Minister, who has banned visits by U.S. nuclear-powered or nuclear-weapons capable warships to his country's ports, has not supported their charges.

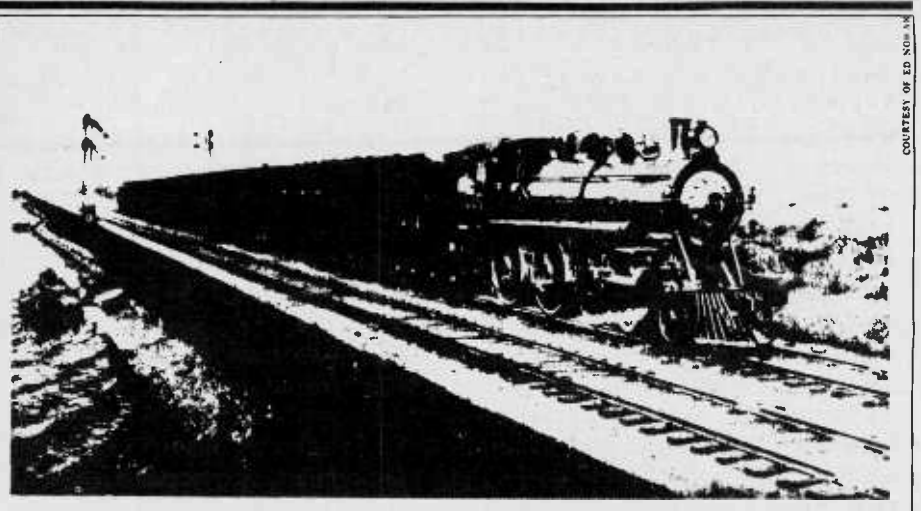
The average New Zealander has a "so what" attitude to such places as Tangimoana--two of the country's major defense transmitting facilities are located in full view beside the main north-south road on the North Island. My tour bus operator called them "army and navy communications stations" as we passed, but later contacts confirmed them as main outlets for secure communications traffic.

Attempts to obtain additional information from official sources ran into a brick wall. Apart from admitting that such well-known installations exist, no other information was available. Even former staff will not divulge any details. Under New Zealand's security laws they could be jailed for revealing anything considered classified information by the authorities. The secrecy documents they have signed during their employment, I was told, do not lapse and in effect are a sort of "lifetime guarantee" of silence, unlike the U.S. where former employees are often a source of information.

New Zealand is an excellent monitoring location. Although most hobbyists follow the usual broadcast station DX, utility and RTTY-DX offer interesting prospects for those with the right sort of gear. Communications receivers and equipment are expensive--up to three times the U.S. price. Specialized equipment like RTTY decoders are not easily obtained and are often home built from information carried in ham magazines.

Imports of such equipment carries heavy import and customs taxes, often doubling the original cost. New Zealanders are also restricted on the value of individual imports which places most equipment beyond their reach unless supplied by a licensed importer, franchised to the brand name.

Despite these setbacks, monitoring the radio spectrum is a fairly popular hobby down under, from the newcomer excited to hear the "biggies" on a new transistor portable or a new advanced hobbyist chasing a 100 watt foreigner, to the big-league intercepts among the sand dunes and pine forest of Tangimoana. ●



COURTESY OF ED NOLAN

The first Twentieth Century Limited *along the shore of Lake Erie*

THE RAILROADS: A Fading Era

by Dan Mulford

I've always been attracted to trains. When our family finally became financially able to buy a house, it just so happened that there was a railroad in our back yard. Being the ripe old age of four at the time, I couldn't figure out why our mother was always yelling about staying away from the tracks. I guess she envisioned us decorating the tracks for several miles if we did get hit!

We lived on those tracks, always talking with the fellows as they stopped during swtiching and learning what time the next one would be through.

I can remember the few steam engines that came through, as they were being phased out for the new diesels then. The last one I saw on those tracks was in the middle of a train being towed to the big engine roundtable in northern Kentucky to be stored. That giant building burned down in the '70s, taking with it a lot of history.

The passenger trains were of special interest to my two sisters and me as we

☞

www.americanradiohistory.com

THE RAILROADS cont'd

always wondered where the people were off to, how they spent their time and, of course, how do they go to the bathroom?

A train excursion still has not become a reality to me so I use my scanner to keep up with railroads, listening to those fellows move millions of tons of freight each day.

Back in the good old days, Morse code was used to do some communicating between depots, but an elaborate private phone system was the primary mode of communications between engine and depots.

Phone boxes are still in place at strategic locations along the line and the engineer and/or caboose conductor could call the depot to get updates, verify information or report any problems. The main drawback was the train had to stop at the box meaning a loss of time needed to keep schedules.

Sometime in the 1960s the local railroad went to walkie talkie radios for the engine, caboose and the depots. Upon my entry to the Citizens Band in 1967, I found out, quite by accident, that the radios were on CB channel 3!

After many chats with these fellows via radio, I had several calling me when they came through town. Being on the local fire department and having this rapport with the railroaders paid off several times. Twice we responded to calls of the train being on fire and once a car was stalled on the tracks.

Communications between our department and the railroad was a great asset to our operations. Hoses stretched across tracks, firemen fighting brushfires along the tracks, and the recurrent "hot box" situation all posed real problems that were worked out easily through the use of our radios.

ENTER HIGH TECH

By the 1970's hundreds of new hand-held radios poured into the trains, all of them on a new band: the VHF high band. A frequency of 160.23 MHz FM was being used and a Bearcat 210 was used to listen in at the firehouse as it still is today. The mode was definitely quieter than the skip-infested CB band!

During a derailment right in the middle of town a couple of years ago, the scanner was the place to be for the latest information. The three days of cleaning up and righting cars was some of the best monitoring yet!

MORE HIGH TECH

The railroad has had what they call a "scanner" set up every so often in the line to inform the depot operator of any defects in a passing train. These include "hot boxes" (high temperatures, usually brakes or bearings going out), high vibrations and other problems.

A defect light at the next signal would alert the engineer who would call in on the phone box to get the information as to what was wrong; the closest personnel to the problem would check it out and report via radio.

Scanner listeners learn of the problem as soon as the rest of the fellows do! Firemen listening to hot box reports have saved response time in the past. But now it will be easier yet--all the better for us the listeners.

The B & O has put into operation an automated voice radio transmission that gives the defect and car number. It announces the mile post number and says it is functioning. Nothing else is heard until the train passes and the scanner gives its report. If a problem is detected the auto scanner will tell the defect and the number of cars dow m the head end.

COURTESY OF ED NOWAK

Leaving Chicago in 1938

THE END IS GONE

In the wake of the financial problems plaguing the railroads the last few years, the cabooses are being phased out. No longer can we see that familiar little house at the end of the train, and receive that wave from the conductor that we have come to expect. The B & O has decided to eliminate these jobs and cars and replace them with a piece of high technology.

A three transmitter device is hooked up to the last car on the train, along with a flashing red light. The device is hooked up to the end coupling and sends on UHF frequencies the air pressure, a reading of slack on the couplings, an indication that the rear end car is moving, and a direction indicator.

According to an engineer, three small antennas mounted on top of the engine receive the signals and display the data on a board in the engine.

The system works pretty well except for a problem occurring in hilly countryside where the trains, some stretching out for up to two miles, wrap around a mountain. The UHF signal won't make it to the engine, making the board show a "no contact" reading.

Since there is no caboose now, switching and detector checkout will have to be done by engine personnel.

But it just doesn't seem like the train is completely across the road if the caboose doesn't go by! It's like not putting the period after the words of a sentence--you're still looking for more.

Gone are the puffing steam engines on those silver tracks; gone, too, are those arms that used to come out of a baggage car on a passenger train to expertly snag a large bag of mail from the hanger alongside of the tracks. I'm glad I got to see them; too bad my children won't.

~ *** ~

I hope you have enjoyed this little "side track." If you have comments or would like to see a follow-up, write to me c/o MT. Until then, good listening! ●

RAILROAD RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)
Megahertz:	
72.0 to 76.0	Operational fixed
72.44	Mobile
72.48	do
72.52	do
72.56	do
76.60	do
75.44	do
75.48	do
75.52	do
75.56	do
75.60	do
160.215	Base or mobile
160.230	do
160.245	do
160.260	do
160.275	do
160.290	do
160.305	do
160.320	do
160.335	do
160.350	do
160.365	do
160.380	do
160.395	do
160.410	do
160.425	do
160.440	do
160.455	do
160.470	do
160.485	do
160.500	do
160.515	do
160.530	do
160.545	do
160.560	do
160.575	do
160.590	do
160.605	do
160.620	do
160.635	do
160.650	do
160.665	do
160.680	do
160.695	do
160.710	do
160.725	do
160.740	do
160.755	do
160.770	do
160.785	do
160.800	do
160.815	do
160.830	do
160.845	do
160.860	do
160.875	do
160.890	do
160.905	do
160.920	do
160.935	do
160.950	do
160.965	do
160.980	do
160.995	do
161.010	do
161.025	do
161.040	do
161.055	do
161.070	do
161.085	do
161.100	do
161.115	do
161.130	do
161.145	do
161.160	do
161.175	do
161.190	do
161.205	do
161.220	do
161.235	do
161.250	do
161.265	do
161.280	do
161.295	do
161.310	do
161.325	do
161.340	do
161.355	do
161.370	do
161.385	do
161.400	do
161.415	do
161.430	do
161.445	do
161.460	do
161.475	do
161.490	do
161.505	do
161.520	do
161.535	do
161.550	do
161.565	do
169.172	Operational fixed
406.413	do
450.470	do
452.325	Base or mobile
452.375	do
452.425	do
452.475	do
452.775	do
452.825	do
452.875	do
452.900	do
452.925	do
452.950	do
457.325	Mobile
457.375	do
457.425	do
457.475	do
457.775	do
457.825	do
457.875	do
457.900	do
457.925	do
457.950	do
470 to 512	Base or mobile
806 to 821	Mobile
851 to 866	Base or mobile
929-930	Base only
952 and above	Operational fixed
1427 to 1435	Operational fixed, base or mobile.
2450 to 2500	Base or mobile
8400 to 8500	do
10,550 to 10,680*	do

www.americanradiohistory.com

InTouch: The Radio Newsstand

by Ken Wood

What if you couldn't read Monitoring Times? What if a handicap of some sort prevented you from reading anything at all? That's a pretty frightening thought, but it is something which some eight million "print handicapped" people must face every day of their lives. They may be visually impaired, totally blind, disabled, or unable to read for some other reason (other than a lack of education). Without radio reading services most would have little hope of ever getting much from the print media.

Radio reading services made use of the Subsidiary Communications Authorization available to FM broadcasting stations to provide their services to the print handicapped.

There are around 100 such services operating in the United States; the largest is probably the InTouch Network in New York City. InTouch was founded by the late James R. Jones in 1974. Jones had lost his sight three years earlier and soon discovered that his inability to read was one of the biggest adjustments he had to make. Jones did not live to see InTouch become a reality. A longtime friend, Jasha M. Levi, picked up Jones' dream and had it in operation by 1978. He remains as director of InTouch.

From studios on West 48th Street in New York City some 300 InTouch volunteers read and read some more. They are housewives, artists, professionals, actors. Each devotes an hour or more per week to read to those who cannot.

Selections from 96 different newspapers and magazines include everything from the New York Times to the New Republic, from Cosmopolitan to Downbeat, from Business Week to Penthouse, and Field and Stream to Rolling Stone.

SCA receivers are provided without charge to qualified listeners living within a 60 mile radius of New York City, including New Jersey and Connecticut. The service enjoys and extension up to 120 miles from New York thanks to its being carried on some area cable systems. InTouch now reaches about four thousand people in its tri-state coverage area.

The network is a non-profit organization which receives financial support from various individuals, corporations, foundations and some governmental grants.

After six years of operation InTouch went national last year. Satellite Syndicated Systems, a Tulsa firm, donated the use of a channel on the Westar IV and Satcom IV satellites. Uplink from the InTouch studios in Manhattan via an earth station in Brooklyn was funded by a grant from the Corporation for Public Broadcasting.

Through the satellite InTouch expects to expand its service to about 300 thousand people in the first year, providing the signal to cable TV operators who, in turn, are required to provide it without charge to those who qualify for the reading service.

Other radio reading systems can also pick up the InTouch network from the Satellite and use the material to supplement their own programming, breaking away from InTouch when it is carrying material of interest only to the New York area and inserting their own local newspapers, complete with local print advertising.

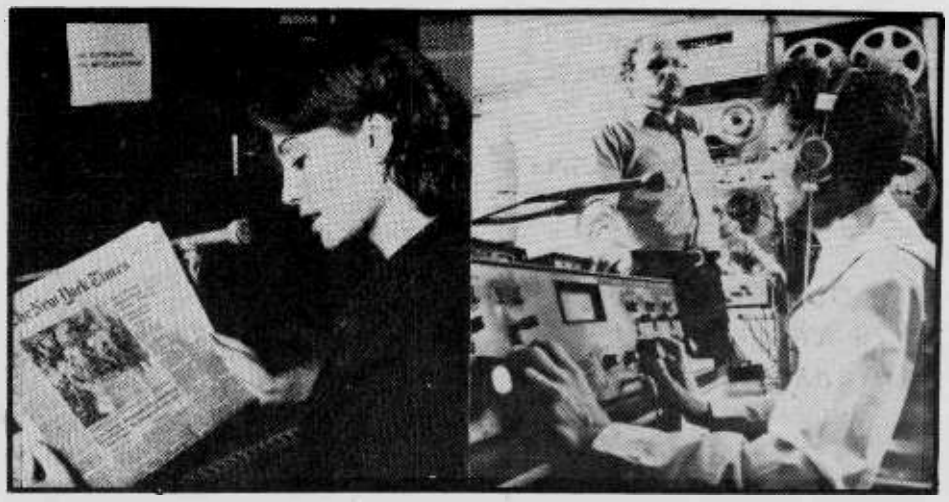
Existing reading services, however, are looked upon as only a secondary means of service; InTouch's primary aim is to reach those who don't now (or didn't) have such a service available, doing so by using the satellite/cable connection.

InTouch is doing what it can to help set up affiliates in areas where no local reading service now exists. Local services, incidentally, have their own Association of Radio Reading Services and can exchange non-dated material among themselves.

InTouch also conducts six weekly interview programs which are carried over three New York City FM stations. The network's program schedule is available in Braille, in large type and via a special telephone number. Another phone source provides daily TV listings.

At the InTouch New York studios, the 6 to 7 AM segment is always live, but much of the rest of the schedule is pre-taped. Operations run 24 hours per day, seven days a week, 365 days a year. One hour per week is in Spanish.

The network has a full-time staff of five people, several of whom are visually impaired. Someone, based upon the going rate for announcers in New York City, has placed a value of a half million dollars per year on the volunteer time donated to InTouch whose network is headquartered at 348 West 48th Street, New York, NY 10036. ●



(L) One of over 300 volunteers reading the NEW YORK TIMES.
(R) Supervising Engineer Michael Bohan (standing left) and the Weekday Morning Engineer Charlie Wetmore executing the technical requirements of a 24-hour-a-day broadcast schedule.

The InTouch receiver--the radio "newsstand" for thousands of print-impaired individuals in the tri-state area.

SCA Use Grows

Subsidiary Communications Authorization, the use of FM broadcast channels to send other types of messages and communications, is expanding rapidly in the major cities of the country.

SCA, sometimes called "phantom modulation" by the surveillance industry, is a process of utilizing unused channel space on an FM signal for additional transmission, undetectable by receivers not specifically equipped for its reception.

Subscriber services are common and cater to doctors, businessmen, the handicapped, and other specialized segments of the domestic and professional population who would benefit from its services which often include stock market quotes, background music and other forms of additional information and entertainment.

Beginning this fall, National Football League fans with SCA receivers in some 21 cities will be able to predict game strategy in their living rooms while tuned to an SCA-equipped FM radio.

Patrick Downs of NTN Communications in Carlsbad, California, offers the strategy game, one of the many new uses of the rapidly-emerging SCA field. Alan A. Reiter edits Subcarrier Communications, a Washington-based industry newsletter.

Fully 23% of the nation's 4500 FM stations now lease their facilities to subcarriers and the number is growing rapidly.

We would like to thank MT reader Evermont Robinson of South Ozone Park, NY, for sharing this Los Angeles Times news item with fellow listeners.

www.americanradiohistory.com

by
Don Schimmel
516 Kingsley Rd SW
Vienna, VA 22180

The first topic for discussion this month presents some revealing details which supplement those in the UTILITY INTRIGUE Special "Cuban Hotline" which appeared in the July 1985 issue of MT. A reader in New Mexico has advised regarding his discovery of the use of a simple substitution cipher system being used in some of the RTTY transmissions between Havana and Cuban overseas installations. You may recall the mention in the "Hotline" article concerning the observation of multi-repeated letter separators in certain Cuban messages.

The New Mexico reader explained that the portion between such separators contains an enciphered message preamble and he supplied those values he had recovered. Working with texts I had collected yielded several additional recoveries. Here are the corresponding alphabets:

CIPHER A B C D E F G H I J K
PLAIN Z I A M Y D O Q - V R
M N O P Q R S T U V W X Y
- J B G P U T C F H L W - NE
SPACE FIGS
S K

Dashes in the plain component indicate unrecovered values.

Although Z is the most frequently observed letter in use as the separator, D and M have also been observed.

To demonstrate the method here is an example:

ZYR BYDZFBCRC ZDNCSQNC
ENT INMEDIATA EMBACUBA
DGACDNBIQZ
MOZAMBIQUE

NOTE: the ENT (ENTREGA) INMEDIATA approximates the U.S. precedence of Immediate.

One can only speculate as to why such a simple method would be used to disguise the addressees of the traffic.

The same reader also forwarded three frequencies he had noted in use by Angola in communicating with Havana. 10590 kHz, 14812 kHz and 10724 kHz. He further stated that some of the messages passed to Angola were not MINREX. Instead they appeared to be military and were therefore probably destined to the Cuban Military contingent operating in Angola.

Some newly acquired titles have been added to my bookshelf. The most recent addition was "ENCYCLOPEDIA OF ELECTRONICS." This volume gives you clear explanations of the various electronic terms. Subjects are cross-referenced making a most comprehensive treatment of the material.

"THE TAB HANDBOOK OF RADIO COMMUNICATIONS" makes a fine companion to the encyclopedia and I am sure both will be referred to frequently. They are available from Tab Books, Inc. Dept. MT, Blue Ridge Summit, PA 17214 and from various MT advertisers.

If you like to follow the communications of the Diplomatic Services, this next title is a must for you. Michiel Schaay has produced an excellent source book "EMBASSY RADIO COMMUNICATIONS WORKBOOK." Included in this publication are the callsigns and frequencies for some 54 countries of the world. Available from various MT advertisers.

The Crypto portion of my bookshelf was not neglected as I purchased "CODES, CIPHERS and SECRET WRITING" from Dover Publications, Inc., 31 East 2nd St., Mineola, NY 11501. Although the book only numbers 96 pages in length, it nevertheless presents a lot of information describing various methods of secret communication since the early days of history.

Last but not least was an addition to the language identification reference aids. This choice was a handbook of idiomatic usage

SHORTWAVE HEADQUARTERS

EEB THE NATIONS LEADING SWL SUPPLIER

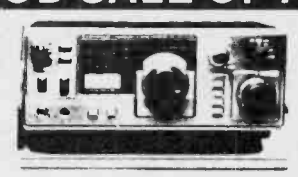
You can count on the Electronic Equipment Bank for:

- The very latest in SWL products
- Friendly knowledgeable sales help
- Fast delivery from our huge inventory
- Full service on ESKA-ICOM-Kenwood-Yaesu
- Big savings on our discount prices
- Easy ordering with our toll free phones

KENWOOD SALE OF A LIFETIME

R-600
- Digital Display
- AM - SSB - CW
- 150 kHz - 30 MHz
- Noise Blanker

$329.95 + $7 UPS



R-1000
All R600 features, plus . . .
- High Accuracy Dial
- Higher Stability
- Clock & Relay for Recorder Control

$399.95 + $7 UPS

R-2000
All R1000 features, plus . . .
- 10 Channel Memory
- Memory Scan and Back Up
- Programmable Band Scan
- 24 Hour Clock Timer
- Optional VC-10 VHF Converter $134.95

$499.95 + $7 UPS

This is a Limited Time Offer. Hurry, You May Never See Prices This Low Again!

ICOM R-71A SPECIAL
EEB IS ICOM'S #1 RECEIVER DEALER AND THERE'S GOOD REASON.
- **EEB** offers more options and modifications to tailor your receiver.
- **EEB** offers 100% QC, including 24 hour bench test and complete realignment for optimum performance. 1985 WRTVH p. 575.
- **EEB** offers our double extended warranty. You're fully protected for 6 months parts & labor.
- **EEB** is an ICOM factory authorized service center. We take better care of you.

Sale price $649.95

THE ALL NEW 8800 IS HERE. IT'S FANTASTIC

$539.95
Introductory Price

The FRG-7700 was a great receiver. Now the new generation FRG8800 takes you a step forward.

- CAT computer compatible
- 12 memories - scan - RIT
- Keyboard frequency entry
- Dual 24 hour clock timer recorder control
- Optional FRV8800 VHF converter 118-174 MHz $99
- All mode AM - SSB - CW - FM
- Green LCD display
- 150 kHz to 30 MHz

EEB Exclusive Options
1. 24 hour bench test and complete realignment for optimum performance including double-extended warranty $40
2. 4 kHz ceramic filter replaces 6 kHz AM Wide ceramic filter Installed $50
3. 2.4 kHz mechanical filter replaces SSB ceramic filter Installed $95

TOSHIBA RP-F11
DXer's Dream

Full page in 1985 WRTV inside front cover for details
- Covers all International & Tropical Bands
- S Meter, Safety Off Lock

Closeout $69.95
A special EEB purchase makes this price possible
Hurry, limited quantity at this price
Optional AC wall adapter $11.95 add $4.00 UPS

Sony ICF 2002	***special*** $199.95*
Sony ICF 4910	$99.95
Panasonic B300	$179.95
Panasonic B600	$429.95
Panasonic RF9	$79.95
Sharp FV310	***closeout*** $89.95
Sharp FV610	***closeout*** $129.95

WORLD RADIO TV HANDBOOK
- Shortwave Listener's Bible
- All SW Stations Listed
- Addresses and Schedules
- Languages and Target Areas
- Equipment Review
- No SWL'er should be without one

Special $19.50 postpaid U.S.

SONY • PANASONIC • TOSHIBA • BEARCAT • JIL • SHARP • UNIDEN • MIZUHO • REGENCY • ICOM • KENWOOD • YAESU • ESKA • PALOMAR • MFJ • Book department—all accessories

FREE CATALOG—Get all the details. Write or call today for our 1985 catalog
800-368-3270

EEB
- We ship world-wide
- SASE for FREE Catalog
- Foreign 3IRC's Air Mail
- Shipping charges not included
- Prices & specifications subject to change without notice

10 miles west of Washington, D.C.
Sorry—No COD's
10-5 Tues., Wed., Fri.
10-9 Thursday
10-4 Saturday
Closed Sunday and Monday

Electronic Equipment Bank
516 Mill Street, N.E.
Vienna, Virginia 22180

Order Toll Free 800-368-3270
Virginia 703-938-3350

***TOO GOOD TO BE TRUE?**

A variation on Murphy's Law states that an error will always be found where it causes the greatest difficulty. Last month's ad showed an erroneous price for the popular Sony ICF-2002 receiver; the correct sale price is $199.95. MT apologizes for any inconvenience this printing error may have caused.

www.americanradiohistory.com

UTILITY INTRIGUE cont'd

entitled "CASSELL'S COLOQUIAL SPANISH." This paperback makes an extremely useful supplement to your Spanish/English dictionary. I picked up this one at a local bookstore and the cost was less than $5.00.

MT readers Richard Baumgart and Mike Hardester have furnished some more details regarding LPL3Ø General Pacheco Radio, Argentina (see UTILITY INTRIGUE June 1985). Both readers have observed a male voice announcement as well as a female voice announcement so it would appear that the station now has two tapes in use. Mike states that, several years back, the station did QSL reception reports sent to the following address:

General Pacheco Radio-LPL30
Seccion Planta Receptora Don Bosco
Lomas de Zamora 252
Don Bosco (B.A.)
ARGENTINA

The address was from an old SPEEDX Utility Guide (1977) and it indicated a card would be sent in about 30 days to acknowledge reception reports in Spanish accompanied by mint stamps for return postage (possibly IRCs might work). He added he has no idea of the current QSL policy of the station.

The 13 MHz region always provides transmissions out of the ordinary--this one was no exception. On 18 June at 1205Z a CW station was heard on 13288 kHz sending V V V CQ 515 AAA 598. This sequence was repeated over and over. It was followed after several minutes by "41 BT" and into 5 figure groups.

At the end of the message he sent RPT RPT and then repeated the message. This in turn was followed by CQ 598 NR 42 BT and again into a text of 5 figure groups. After a repetition of the last message the station went down with AR AR SK SK. All numbers were sent full except the zero which was cut at T.

On 17 June another type of number transmission was noted. At 1247Z on 13301 kHz a CW transmission was observed as follows: NR 13-R-172015 -FM VJB to FGJ - GR 22 BT.

The text was 5F groups with numbers 3 4 5 6 7 sent full and 1 2 8 9 0 sent cut as A U D N T. Upon completion of the message another one was sent to the same addressee from the same originator and again the text was 5F groups of the same type as the previous message. There was no operator chatter or anything else which could be used as a clue to the identification of the activity.

An unidentified Spanish language activity was intercepted on RTTY 50-850 on 16542 kHz at 1100Z June 17. Messages were sent via RTTY and QSL's were given via USB voice. Note the use of letter Q in the DTG: 5E1 de 2X8 NR .. R 150709Q JUN 85 OFL NR 0609 FM 6Z2 TO 5E1 GR SC (NC) BT

A CW activity noted on both 11 and 12 June on 16484.5 kHz seems to be like one previously heard on 16483 kHz at 1917Z May 16. On this earlier date X5H was being called by LTR. On the more recent dates callsigns BTW (poss BØW) Q4X D9L and T5M were observed. A lot of calling back and forth took place with several QSA requests during the period of 1949Z to 2010Z but the stations went down without passing any traffic or operator chatter.

Due to frequent travel during the past two months coupled with due dates for the column, I had to hold back some of the loggings. Therefore, I am providing two sections of intercepts this month (one for June loggings and the other for July loggings) in order to get caught up with material copied while on the go.

LATE ITEM

The GODSPEED (see UTILITY INTRIGUE August 1985) continues to be plagued by the weather. The voyage which was initially scheduled for arrival at Jamestown Virginia, in early July is now not likely to be completed until late fall and perhaps not until the spring of 1986.

A Washington Post article indicates that due to the approaching tropical storm season, it has been decided to sail the ship from its last port of call, St. Thomas in the Virgin Islands, to San Juan, Puerto Rico, for storage until the hurricane season has run its course.

According to the Post, Jamestown-Yorktown Foundation officials have stated that the ship will definitely complete the voyage eventually.

It is hoped that when the voyage is resumed, sufficient publicity will accompany the event to allow interested SWLers to try and listen in on the activity during the last leg of the journey. ●

LOGGED JUNE 1985

KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
6813	172134	CW/SPANISH PT/DTG HAD LETTER R IN PLACE OF Z, TEXTS WERE MILITARY TYPES
10534	171945	RTTY 75-850/CANADIAN AREA WX IN ENGLISH
12221	171231	CW/CLP1 DE CLP55/HAVANA FROM GT GUYANA
12223	110230	RTTY 75-425/PRESS IN ENGLISH
12334	182210	CW/4Q 3P DE 5R/UNIDENTIFIED
13304	182205	CW/CQ DE CLQ(HAVANA CUBA)/CALL TAPE
13366.5	102220	RTTY 50-425/DE 5YD(NAIROBI KENYA) RY'S
13374	252145	RTTY 50-850/POSS CUBAN MINREX FREQ
13392	171230	CW/DE CLP1(HAVANA) QSY 12220 (SEE 12221)
13401	171245	CW/ZNWA DE BE24(POSS BRITISH SHIP FROM CHINESE MAINLAND STN)
13480	161905	CW/5F GRPS, ZERO CUT AS T
13795	110130	RTTY 50-850/DE ZVK(RIO DE JANEIRO AERADIO BRAZIL) RY'S
13815	252125	RTTY 75-850/POSS CXR (MONTEVIDEO NAVAL RADIO URUGUAY)
13996	240035	RTTY 75-425/PRESS IN FRENCH
14457	191130	RTTY 50-425/PRESS IN GERMAN
14600	110030	RTTY 50-850/DE CAK(SANTIAGO(LOS CERRILLOS AB) CHILE) RY'S
16137	102359	RTTY 50-425/RCC HAVANA TESTING TO ITT WC NY 123456789 RY'S
16412	160215	RTTY 50-425/PRESS IN SPANISH
16449	162025	CW/5F GRPS, CUTS ZERO AS T
16686	112140	RTTY 50-170/URB2 DE UFNH (KLAIPEDA RDO LITHUNIANIAN SSR FROM SOVIET SHIP) 5FGRP
16971	112200	RTTY 75-170/NODT DE NMA(USCG HONOLULU)
17122	110005	RTTY 50-850/WX & MARITIME TFC IN PORTUGUESE.
17617	112210	RTTY 50-425/5F GRPS/POSS CODED WX
25130	171420	CW/DE LPD91/34(GENERAL PACHECO, ARG)

LOGGED JULY 1985

KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
3484.5	070318	USB VOICE/AIR WX IN ENGLISH FOR FLORIDA AREA AND ATLANTA.
4327	080113	CW/FFL2-FFL3(ST LYS, FRANCE) CALL TAPE
4419	080112	USB VOICE/MSGS RE RIVER BARGES
4513	190125	CW/A27 M31 DE ØA/6F GRPS
4515	080110	CW/NO CS/5F GRPS, CUTS ZERO AS T
4622.5	190309	CW/NO CS/5L GRPS
6416	071119	CW/WLO2(Mobile, AL) OCEAN WX IN ENGLISH
6429	070312	CW/DE CFH(MARITIME STN, HALIFAX, NS, CANADA)WITH NAVIGATIONAL INFORMATION
6461.5	051040	CW/DE FUM(PAPEETE NAVAL RDO, TAHITI)
6513.5	090127	CW/AUL DE KCU(NOT IDENTIFIED)
6810	190050	CW/NO CS/PT SPANISH MSGS, MEXICAN MILTY
6834	190048	RTTY 50-425/CODED WX
6858	190044	RTTY 50-425/DE SUC (CAIRO, EGYPT) RY'S
6982	190041	RTTY 50-425/PRESS IN ENGLISH
7440	200033	RTTY 75-425/PRESS IN ENGLISH
7468	051035	CW/NO CS/5F GRPS, ZERO CUT AS T, MSG HEADING WAS 109 253. DOWN WITH TTTTT
8687.5	061220	CW/WX & NAVIGATIONAL INFO IN ENGLISH
10051.5	200030	USB VOICE/WX IN ENGLISH FOR CANADA
12699.5	061126	CW/DE NMR(COMMSTA SAN JUAN, PR)
12718.5	071855	CW/DE NMN(COMMSTA PORTSMOUTH, VA)
12995	062158	CW/DE IAR76-IAR33(ROME ITALY) CALL TAPE WITH PHRASE "VIA RADIO ESTAMPA ROMA"
13037.8	062156	CW/DE KLC(GALVESTON, TX) CALL TAPE
13066	062153	CW/DE OST4-42 OST5-52(OOSTENDE,BELGIUM)
13100	062152	CW/DE TIM(LIMON, COSTA RICA)CALL TAPE
13394.7	071955	CW/32 DE 31 K(UNIDENTIFIED)
13395.8	192026	CW/KNY25 DE ?(ROUMANIAN EMB WASH DC FROM UNIDEN STN)
13425.5	062113	CW/426 426 426 1(RPTD OVER AND OVER)
14419	201903	CW/260 DE 515(UNIDEN) QSY 22 & QSY34
14455.5	052155	CW/Y7L36 (GDR EMB HAVANA CUBA) CALL TAPE
14514	201850	CW/567 567 567 567 567 BT 086 086 (ZERO CUT AS LETTER T)
15711.7	061437	CW/NO CS/5L GRPS SPEC CHARAC IM AA OE OT
15717	061440	CW/NO CS/5F GRPS,ZERO CUT AS T
16771	061806	CW/NO CS/5F GRPS, ZERO CUT AS T
17170	051506	CW/DE PJC(CURACAO(WILLEMSTAD))CALL TAPE
18263	201826	RTTY 50-425/NO CS/ARABIC TEXT
18619.6	201820	CW/CLP1 DE CLP18(HAVANA FROM CUBAN EMB DAR ES SALAAM, TANZANIA)
18659	051500	CW/CLP25 DE CLP1(CUBAN EMB MAPUTO, MOZAMBIQUE FROM HAVANA)
18989.5	062118	USB VOICE/RADIO QUITO DE RADIO BOLIVAR, SS CHATTER

www.americanradiohistory.com

VHF SKIP REPORT

BY CHUCK ROBERTSON
RT. 2 BOX 850
CREAL SPRINGS, IL 62959
U.S.A.

FLORIDA PIRATES

An ever increasing number of illegal mobile telephone base stations located in the 47 to 49 MHz subband are coming into use in southern Florida!

I began logging these "pirate party lines" in 1984. The summer skip of 1985 has proven that these stations are still active, and that even more radiotelephones are now in operation!

All channels are full-duplex base. The half-duplex mobile channels have not been located yet.

Pirate Mobile-Telephone List

47.47 English	47.77 English
47.53 English	47.83 English
47.59 Spanish	48.93 Spanish
47.65 English	48.97 English
	48.99 English

When I first discovered the Florida pirate mobile-telephones my immediate thought was they might be spurious signals, either images or intermodulation.

I searched the standard 35 and 43 MHz U.S. radiotelephone bands while receiving these illegal comms but only found some Florida paging stations. Furthermore, the FCC master frequency files show no low band radiotelephone operations licensed to the state of Florida.

Images from point-to-point telephone relay stations in the 72 to 76 MHz band were also considered, but such images would fall outside the 47 to 49 MHz area.

Conclusion: These Florida mobile-telephone stations are indeed genuine!

Note that the channels fall in between FCC allocations for water, power, petroleum, forest, special industry, and special emergency frequencies. Using such split frequencies decreases the likelihood legal spectrum users will receive interference from the pirate mobile telephones and respond by calling in the FCC.

The 47.65 MHz channel is used exclusively by a business called Bay-to-Bay Harbor. Mobile units have mentioned being in the Tampa and St. Petersburg area.

On 47.83 MHz a chap was enthusiastically recommending his imported radio to his friend; "They cost $2100 U.S." The implication seems clear--These radios were purchased outside the United States, possibly Mexico.

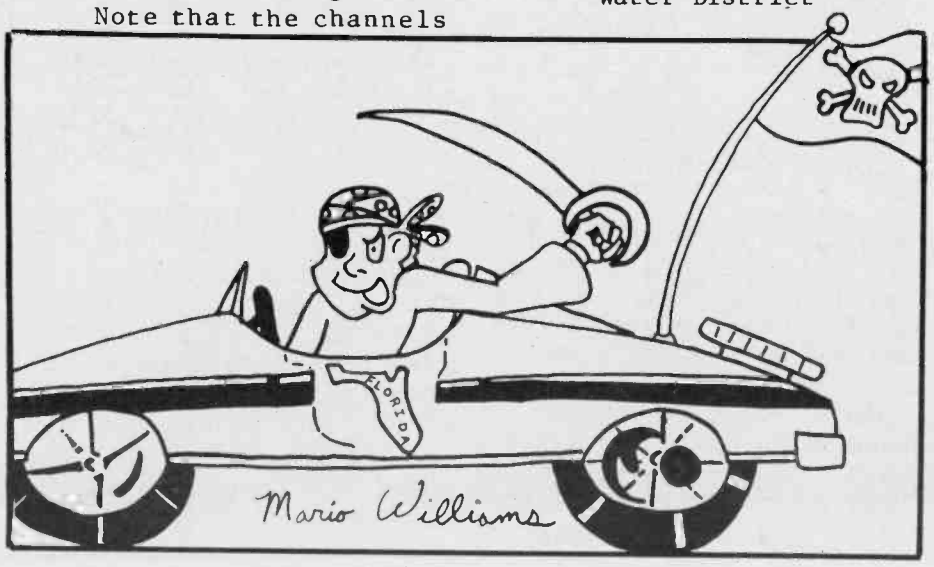
As for the Spanish comms on 47.59 and 48.93 MHz, these could be coming from some of Florida's large hispanic population. However, no solid location information has yet been gleaned from the conversations.

These certainly are intriguing operations, especially when one considers the many foreign political groups, drug smugglers and various spies active in southern Florida. Of course, I'm willing to believe these pirate channels are used by otherwise-law-abiding individuals and businesses whose only wish is the privacy of uncongested radio communications which operating in between FCC-allocated frequencies provides! Only organized monitoring will reveal just who is using these pirated channels.

MONITORING FLORIDA

The best way to tell when Florida is producing VHF skip is to constantly monitor one or two quintessential frequencies. The following channels are very active, with stations giving call signs regularly.

30.94 Southern Florida Water District
37.18 Dade County (Miami) Civil Defense
39.10 & 39.18 Florida State Civil Defense
45.06 Florida State Police



U.S. MOBILE TELEPHONE UPDATE

As a result of recent FCC rule changes, all U.S. low band radiotelephone channels have been re-allocated for one-way paging services. Existing low band radiotelephone stations and mobiles may continue to use the band for a couple more years, but will eventually be relocated to the UHF-high or UHF radiotelephone bands.

According to the FCC Master Frequency File the following areas may still be operational. This is your last chance to monitor legal U.S. mobile telephone comms on low band!

Refer to the January 1985 Monitoring Times article, "Paging Panorama" for the complete list of low band frequencies used exclusively for paging.

Frequency Pairs Base/Mobile	Area of Operation
35.66/43.66	Washington, D.C.; New York; Connecticut; Pennsylvania
35.50/43.50	New York; Pennsylvania; Ohio: Michigan
35.46/43.46	California; Oregon; Washington
35.42/43.42	Ohio; Michigan
35.38/43.38	California
35.26/43.26	Oregon; Washington

CALLING NASSAU

Visitors to the Bahamas report very little use of VHF radios, yet I've found several active Bahamian frequencies while sitting comfortably in front of my scanners in Illinois!

There are many point-to-point radiotelephone channels to be heard in the 48 to 50 MHz subband. The channels are half-duplex (the caller's side) although the other half of the conversation can often be heard weakly.

The stations transmit constantly, even when no one is making a phone call. This results in an "open carrier," and makes locating the operations easier. The language is British West Indies English.

Bahama Radiotelephones

48.00	48.42	49.42
48.04	48.82	49.62
48.20	48.96	
48.28	49.40	

The areas of operation for these various channels

MONITOR . . . . . .

Do it yourself and save. Why pay for someone else to have all the fun? *73 Amateur Radio's Technical Journal* publishes more easy-to-build construction projects than any other ham magazine. Every issue is packed with simple articles that will put your soldering iron to work.

Stay informed with the latest ham news. *73*'s monthly columns give you the facts you need:

73 International—learn about foreign contests, reciprocal licensing laws, and how hams operate in other parts of the world.

New Products—find out about the latest state-of-the-art equipment.

Reviews—comparison-shop from home and save money.

DX—get DXpedition updates, profiles of famous hams, and tips for beginners.

Never Say Die—publisher Wayne Green's bold editorials are sure to give you something to talk about.

Subscribe to *73* today. A full year (12 issues) is only $19.97. You'll save nearly $10.00 off the regular newsstand price. Just fill out the coupon, or call (toll free) 1-(800)-258-5473 and charge it.

Order *73*—ham radio never sounded so good.

YES! I want to monitor *73*. Send me 12 issues for $19.97.

☐ Check/MO ☐ MC ☐ Visa ☐ Amex ☐ Bill me

Card #_____ Exp. Date_____

Signature _____

Name_____

Address _____

City_____ State_____ Zip_____

Canada & Mexico $22.97/1 year only, U.S. funds drawn on US bank.
Foreign surface $39.97/1 year only, U.S. funds drawn on U.S. bank.
Foreign airmail, please inquire.
Please allow 6-8 weeks for delivery.

736RMT

73: Amateur Radio's Technical Journal, PO Box 931 Farmingdale NY 11737

www.americanradiohistory.com

VHF SKIP cont'd

are unknown. Are they all located on the same island? The Commonwealth of the Bahamas is a 760-mile-long island chain composed of 700 islands, about 30 of which are known to be inhabited. That gives us plenty of possibilities!

Callers on 48.00, 48.42 and 48.96 have been heard giving their telephone number requests to the "Nassau operator." Nassau is the capitol city of the Bahama Islands and is located on New Providence Island.

A few Bahamian businesses have also turned up in the 49 MHz area. A transport company can be found on 49.05 MHz.

Another transport company uses a repeater on 49.875 MHz (cordless telephone frequency in the U.S.) having a two-second delay. Occasionally, U.S. police traffic is rebroadcast over the output, but no solid ID has yet been made which would lead to determination of the input frequency. The frequency 49.45 MHz is also active but use is unknown.

Next time you get the urge to travel to the Bahamas, don't bother with the airport or ship lines. Just turn on your scanner!

HURRICANE SKIP

In North America hurricane season extends from June 1st to November 1, with September the peak month for these most dangerous and destructive of all storms.

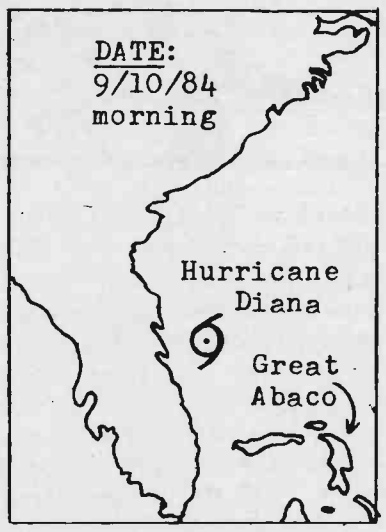
The strong winds associated with these counter-clockwise-spiralling air masses can also produce minor sporadic-E ionization. Hurricanes and the ionization they create are often out at sea where only marine and offshore oil rig operations are likely to be heard; however, if the hurricanes should come inland, coastal communications may also be propagated.

On the night of September 9th, 1984, forces were coming into play which would result in the formation of hurricane Diana. The skip I received that evening on 31.48 MHz was from the Gulf Fleet Marine Corporation.

1900 EDT: The vessel Gulf Titan was giving its position report to Harvey base, Louisiana; 24° 24' north, 81° 52' west--Straits of Florida, south of Key West.

2000 EDT: Gulf Lightning and Gulf Thunder were talking about the high seas and winds.

2200 EDT: Martie de Felice was talking to the Estef de Felice: "We're anchored off the Great Abaco island, about 150 miles from Nassau." (See illustration.)



Hurricane Diana off the Florida coast

By the morning of the 10th, winds had exceeded 75 mph and hurricane Diana was officially born. Gales surrounding the eye of the hurricane extended outward 150 miles to the northeast and 50 miles elsewhere. Luckily, Diana stayed out at sea.

Expect more hurricane activity this fall. Central America, Mexico, the Gulf states and southeastern U.S. coastal states are all within range of North Atlantic hurricanes. If the storms should come inland be prepared for a skyfall of skip!

FALL PROPAGATION

Seasonal F_2 ionospheric conditions should improve in September and October. However, we're presently approaching the end of the 21st solar cycle, which will arrive in late 1967. This means solar flux intensities will be at an all time low for the decade, and F_2 skip will likewise be sparse.

The ionization responsible for long haul F_2 skip is produced by ultraviolet and soft X-ray radiation from the sun. The lower the solar activity (sunspots and flares), the less ionizing radiation is produced, and the fewer F_2 skip openings will occur.

Solar flux intensities are actually at their yearly highest during the summer months due to the sun being more directly overhead. This increases F_2 ionization but also heats the F_2 layer and causes it to expand. The overall effect is a decrease in the concentration of ionization!

As fall approaches, the F_2 layer cools off and ambient ionization has a chance to reach concentrations capable of reflecting VHF frequencies. Furthermore, the air temperature of the northern and southern hemispheres is more nearly uniform: fall in the north, spring in the south. The best chance for long distance F_2 skip between the continents exists during this period.

The arrival of winter further cools and compresses the ionosphere, but the sun is no longer "overhead," and flux intensities reach their lowest for the year. If the solar cycle was at or near its peak, ionizing solar flux would be sufficient to allow continued F_2 openings. But this will not be the case during the solar low we are presently experiencing. Mid-winter F_2 openings are expected to be few and far between for the next four years or so. At least we still have single and multi-hop E_s skip to count on!

NEXT MONTH: Mysterious scrambled Russian communications have been intercepted! Time domain scrambling is used, and the point of origin may be Cuba! Don't miss this Monitoring Times exclusive!!

by James R. Hay

This month the continent of Europe is our subject; first, let's see what the Federal Republic of Germany has to offer.

DAO - Kiel Radio

SSB
2170.5 kHz
2182
2772
2775

DAN - Norddeich Radio

CW
4308.5 kHz
6435.5
8483.5
12898.5
17143.6
22515
26108

The following frequencies (all SSB) are used exclusively by Norddeich with the following call signs:

DAN	DAM
4308.5	4265
6435.5	6475.5
8483.5	8638.5
12898.5	12763.5
17143.6	16980.4
22515	22476
26108	25196

DAL	DAF
4244	4220.5
6456.5	6363.5
8511.9	8672.5
13027.5	12832.5
17177.6	17048
22340.3	22415
26340	26227.5

Also from Norddeich Radio the following worldwide shared frequencies are used for SSB traffic with these call signs:

DAH channel	DAI channel	DAJ channel
413	423	414
828	820	601
1212	1218	817
1639	1634	1218
2222	2223	1616
		2207

DAK channel	DAP channel
412	401
820	824
1208	1205
1624	1610
2238	2217

Next we'll move on to the other Germany, the German Democratic Republic. The main station there is Ruegen Radio which uses the call sign Y5M and operates on the following CW frequencies:

Y5M - Ruegen Radio

CW		
4233.5	6343	8443
4240	6358.5	8463
4242.5	6428.5	8584
4260	6449.5	8660
4265	6466	8696
4313		
12681.5	16892.9	
12702	16907.3	
12745	16965	
12860.5	17000	
13062.5	17100	
22334.5	25069	
22393	25308	
22401	26455	
22422		
22437		
22481		
22545		
22550		

Ruegen Radio also operates SSB on the following channels:

SSB channel				
405	802	1202	1619	2220
407	809	1204	1629	2224
410	826	1206	1633	2226
419	831	1232	1640	2230

Next comes a challenge --Austria--which has two stations for vessels on the Danube River. The first operates on SSB using the name Donaufunk Wien on the frequencies 4066.1, 4072.3, 6206.2, and 8204.3 kHz; all are simplex frequencies. The other station, Wien Radio, also operates on SSB:

www.americanradiohistory.com

HIGH SEAS cont'd

OED 36	4143.6
OED 37	6218.6
OED 38	8294.2

These stations have a power of 100 watts, and thus present quite a challenge. I would be interested to hear if any of you have recently heard either one.

Another unlikely place for a maritime station is Switzerland, but Bern Radio operates on several frequencies using the call sign HEC and HEB.

HEC and HEB - Bern Radio

CW	SSB
4352.5	ch. 424
4355.5	822
8709	824
8714	831
8717.5	1202
13080	1227
13092.5	1230
13095.5	1611
17205	1615
17218.5	1631
17221	2214
22566.5	2220
22586	2232
22588.5	

The last country for this month is Belgium and Oostende Radio which uses call signs OST and OSU. They operate on the following frequencies:

OST and OSU - Oostende Radio

CW		
4290.5	6328.25	8478
4298	6411	8652
12781.5	17017.1	
13067	17187	
22351.5	25135	
22533	27017	

SSB channels			
408	602	803	1207
411	606	805	1213
417		806	1215
421		812	1218
422		813	1219
425		815	1221
		821	
		829	
1609		2209	
1613		2214	
1621		2219	
1625		2211	
1627		2225	
1630		2239	

Frequencies		
6218.6 kHz		12429.2
6221.6		12432.3
		12435.4
8291.1		
8294.2		16590.2
		16593.3
22124		
22136.4		

That's all for this month. As always, your correspondence is welcome. Please address any letters to: James R. Hay, 141 St. John's Blvd., Pointe Claire, P.Q., Canada H9S 4Z2. ●

SIGNALS FROM SPACE

by
Larry Van Horn
160 Lester Drive
Orange Park, FL 32073

Since the first edition of COMMUNICATIONS SATELLITES was printed several bits of information have come to light about the Russian NAVSAT satellites that are heard around 150.0/400.0 MHz. A review of these satellites and examination of the new data is warranted.

Perhaps the easiest VHF Soviet satellites for newcomers to monitor are the Russian NAVSATs. These satellites are launched from Plesetsk on the C-1 booster rocket into 1020 x 965 km orbits inclined 82.9°. Orbital periods average 104 minutes.

Based on orbital data, Nicholas Johnson of Teledyne Brown has determined that there are two different systems of NAVSATs. One system is comprised of four satellites spaced 45° apart; the second system utilizes six satellites spaced 30° apart. The letter is referred to as "constellation two" and the former as "constellation three."

It would appear that the second constellation is used by the Soviet military and the third by civilians. The more satellites in a particular constellation, the more accurate the navigation information and the more frequent the updates.

At the time I wrote the book, I did not know that the frequencies described in the Perry and Woods paper published by the Royal Society of London were not accurate. Since that time the data has been refined and here are the latest available frequencies for the Soviet NAVSAT system as well as the U.S. Nova NAVSATs. (Note the VHF/UHF frequencies are paired.)

U.S. Nova NAVSATs
149.988/399.968 MHz

USSR Cosmos Civilian NAVSATs
150.000/400.000 MHz

USSR Cosmos Military NAVSATs
149.910/399.760 MHz
149.940/399.840 MHz
149.970/399.920 MHz
150.030/400.080 MHz

At the end of 1984, the Soviet military NAVSAT system consisted of the following satellites: Cosmos 1448, 1513, 1577, 1598, 1605 and 1610. The Soviet civilian NAVSAT program consisted of Cosmos 1447, 1506, 1553 and 1574.

John Biro recently dropped me a note to let me know that he has been hearing the Soviet NAVSATs. John has done some extensive monitoring around the 150 MHz area with very favorable results. I noted that John also has received the same on-off keying type signal on 150.010/.015 that I have.

These signals are not received very frequently and at most there are probably one or two satellites using this frequency. My preliminary judgement is that this could be a Soviet Geodetic satellite frequency, but the final analysis is not in yet.

Monitors might want to keep an eye on this frequency and let Signals from Space know of your intercepts of these unknown satellite transmissions. You can send your intercept reports to: Signals from Space, 160 Lester Drive, Orange Park, FL 32073.

A LOOK BACK

June 28 was the 20th anniversary of a new era that today makes possible instantaneous, low-cost and reliable communications between virtually any two points on earth. On June 28, 1965, a telephone call from President Lyndon B. Johnson to leaders in six European nations, transmitted live via satellite over the Atlantic Ocean, marked the first commercial satellite transmission. The event was recognized around the world as the start of a revolution in communications that has today made a reality of the phrase "the global village."

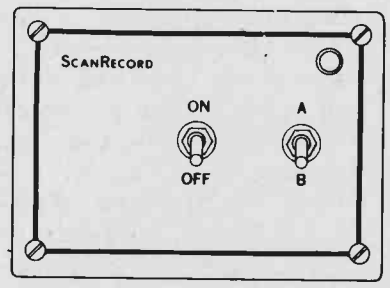
"This moment marks a milestone in the history of communications between peoples and nations," said President Johnson during that landmark telephone call. "For the first time a manmade satellite of earth is being put into service as a means of communications between continents."

That satellite, the Early Bird, was an 85-pound marvel of electronic technology. Launched by the Communications Satellite

While you were out...

SOMETHING HAPPENED!

Now you can record all the scanner action that occurred while you were away for playback later. The Scan Record recorder coupler will automatically turn on your tape recorder when your scanner is receiving a message and route the audio from the scanner to the recorder.



The recorder runs only when a message is received. It does not run when the scanner is just scanning. This lets you record a lot of traffic on one tape. In addition to scanners, it will work with any receiver that has a squelch control.

The easy to use ScanRecord features user selectable drop-out delay, adjustable sensitivity, activity indicator and recorder control switch. The unit is all solid-state with no relays to stick or wear out. It operates on 9 to 15 volts DC and can be powered by a 9 volt battery or AC adapter.

All you'll need in addition to your scanner and the ScanRecord is a tape recorder with a microphone jack and a remote control jack. The ScanRecord comes complete with all connecting cables.

Your complete satisfaction is guaranteed. Order your ScanRecord today for only $35.75 plus $2 shipping and handling.

Mail and phone orders are welcome. Send check or money order or we can ship via UPS COD. We also accept VISA and MASTERCARD. Please include your card number and expiration date.

FREE CATALOG featuring scanner accessories, carrier/subcarrier detectors, voice scramblers and unusual kits sent on request.

CAPRI ELECTRONICS
Route 1-M
Canon, GA 30520
(404) 376-3712

www.americanradiohistory.com

SIGNALS FROM SPACE cont'd

Corporation (COMSAT) and capable of transmitting 240 simultaneous telephone calls or one television channel, it increased by nearly two-thirds the telephone capacity across the Atlantic and was the only mode of live transmission for transatlantic television. The event also marked the first step in the creation of a global network of satellites linking the entire world.

From President Johnson's first transatlantic telephone call, events progressed quickly. By early 1967, satellite service over the Pacific Ocean had been initiated. Two and a half years later, full global coverage became a reality as an international communications satellite was placed into service over the Indian Ocean. Meanwhile, more than 60 countries of the world were earnestly working on international agreements leading to the formation of the International Telecommunications Satellite Organization (INTELSAT).

The success of international communications satellite services paved the way for the development of other satellite applications. In 1976, COMSAT launched three Marisat satellites, one each over the Atlantic, Pacific and Indian Oceans. These three satellites for the first time created a global instantaneous communications network for maritime users, a system which today connects over 3,500 ships, offshore platforms and other users with telephones anywhere in the world.

Domestic satellite services also evolved rapidly. Recognizing the utility of satellite communications, the American Telephone and Telegraph Company (AT&T) signed a contract with COMSAT General for the lease of a four-satellite system, COMSTAR, designed to provide domestic telephone services. The COMSTAR satellites were launched in 1976, 1978 and 1981, and continue to be used by AT&T for long distance telephony.

The international communications satellite industry has come a long way from the launch of Early Bird and the 11-nation commitment to form INTELSAT of the mid-1960's. Today INTELSAT V satellites are capable of transmitting 12,000 simultaneous telephone circuits and two television circuits.

We have progressed from only 138 half-circuits over the Atlantic Ocean in 1965 to a global satellite system which carries approximately 75,000 half-circuits (the satellite transmission from point of origin to the satellite or from the satellite to an earth station), of which the United States operates about 17,050.

The INTELSAT satellite system itself has grown from 11 participating nations in 1964, before the Early Bird satellite was launched, into perhaps the most successful international cooperative venture of all time, with 110 nation-members. From a handful of international earth stations in a half dozen nations, INTELSAT today consists of more than 160 earth stations serving over 170 nations and territories around the globe.

● RS-8, the Russian amateur radio satellite, is showing end-of-life signs according to veteran satellite operators. Spacecraft controllers in the USSR have said the satellite is not responding to commands well and operators have noticed various malfunction problems, including intermittent passband operation and possibly anomalous telemetry.

RS-8 was launched in salvo fashion with RS-3, 4, 5, 6, and 7 on December 17, 1981. Only RS-5 and -7 are in full working order now. RS-6 succumbed earlier this year, while others in the salvo have ceased operation. Occasional reports suggest RS-1 may be sending anomalous telemetry. RS-1 launched October 26, 1978, apparently ceased functioning reliably (predictably) in May 1980.

According to AMSAT officials, Russian controllers began seeing serious RS-8 malfunctions sysmptoms on or about June 4.

The failure of RS-8 would leave RS-5, 7, AO-10, UO-9, and 11 as the remaining operating OSCARs (information courtesy of ASR No.104).

SPACE LAUNCH REPORT

After many requests, I have decided to initiate a regular feature in Signals from Space, the latest launch report of satellites. This should help those of you who cannot keep track of launches get all of your information at one location: MT's Signals from Space. Drop me a note and let me know what you think of this idea.

Data for the Space Launch Report is courtesy of the Spacewarn Bulletin-Goddard Space Flight Center; NASA Thirty Day Special Bulletins, Goddard; COMMUNICATIONS SATELLITE by the editor; and the editor's monitoring during the last thirty day period (this report May, 1985).

1985-34A Space Transportation System mission 51-B was launched April 29, 1985, from the Kennedy Space Center aboard Challenger. Orbital elements were period 91.6 min., inclination 57.0°, apogee 358 km, and perigee 345 km. The payload included NUSAT-1 and Spacelab-3. Crew members were R. Overmeyer, F. Gregory, D. Lind, N. Thagard, W. Thorton, L. Vandenberg, and T. Wang. STS-51B returned to Edwards AFB.

(Frequencies: 259.7, 279.0, 243.0, 296.8, 2106.4, 2106.406, 2205.0, 2215.0, 2217.5, 2250.0, 2287.5, 15000.85 MHz)

1985-34B NUSAT-1 was launched from the orbiting STS-51B on April 29, 1985, by NASA. Orbit elements are period 91.5 min., inclination 57.0°, apogee 354 km, and perigee 345 km.

1985-35A Gstar-1 launched on May 8, 1985, from Kourou, French Guiana, on an Ariane vehicle by ESA. Orbit elements are period 635.8 min., inclination 7.0°, apogee 36,027 km, perigee 201 km. Geostationary orbital position 103° west. (Frequencies: 14003-14498 MHz)

1985-35B Telecom 1B was launched May 8, 1985, from Kourou, French Guiana, on an Ariane vehicle. Orbital elements are period 634.5 min., inclination 6.9°, apogee 35,960 km, perigee 201 km. Orbital location in geostationary orbit will be 5° west. (Frequencies: 3.7-4.195 GHz, 7.255-7.370 GHz, and 12.5-12.75 GHz)

1985-36A Cosmos 1649 was launched May 15, 1985, by the USSR. Orbital elements are period 92.3 min., apogee 415 km, perigee 356 km and inclination 72.8°. Mission: short duration photo recon (14 days). Launched from Plestesk on A-2 booster around 1230 UTC. Decayed May 29, 1985.

1985-37A Cosmos 1650 was launched May 17, 1985, by the USSR. Orbital elements are period 675.6 min., apogee 19,142 km, perigee 19,110 km and inclination 64.8°. Mission: Large GLONASS Soviet NAVSAT. Launched from Tyuratam on a D-1e booster. (Frequencies: 1250.0/1603.5 MHz)

1985-37B Cosmos 1651 was launched May 17, 1985 (with 1650/1652), by the USSR. Orbital elements are period 675.3 min., apogee 19,132 km, perigee 19,104 km, and inclination 64.8°. For mission and frequencies see 1985-37A.

1985-37C Cosmos 1652 was launched May 17, 1985 (with 1650/1651), by the USSR. Orbital elements are period 675.8 min., apogee 19,145 km, perigee 19,119 km, and inclination 64.8°. For mission and frequencies see 1985-37A.

1985-38A Cosmos 1653 was launched on May 22, 1985, by the USSR. Orbital elements are period 89.59 min., apogee 321.8 km, perigee 222.7 km, and inclination 82.3°. The satellite was launched from Plesetsk on an A-2 booster and decayed on June 5, 1985. Mission: military photo recon.

1985-39A Cosmos 1654 was launched May 23, 1985, by the USSR. Orbital elements are period 89.65 min., apogee 364.7 km, perigee 180.4 km, and inclination 64.88°. Satellite was launched from Tyuratam on an A-2 booster. Mission: long duration photo recon.

1985-40A Molniya 3-24 was launched on May 29, 1985, by the USSR. Orbital elements are period 735 min., apogee 40,000 km, perigee 600 km, and inclination 62-79°. Satellite was launched from Tyuratam on a D-1e booster. Mission: Highly eccentric orbit COMSAT. (Frequencies: 3658-3692, 3758-3792, and 3858-3892 MHz)

1985-41A Cosmos 1655 was launched by the USSR on May 30, 1985. Orbital elements are period 105 min., apogee 1029 km, perigee 997 km, and inclination 82.9°. This satellite was launched from Plesetsk on an C-1 booster. Mission: Standard Soviet Navsat. (Frequencies: around 150/400 MHz) ●

Space Shuttle Experiment Receivable on Scanners

We received too late for publication last month information of interest to MT readers. The University of Iowa Amateur Radio Club flew a plasma diagnostics package (PDP) on mission 51F which contained a sensitive VLF (very low frequency) receiver. Output from the receiver was retransmitted to the earth on 400.68 MHz FM.

The package, orbiting close by the Shuttle, transmitted for several days and tracking was the same as for the Space Shuttle.

www.americanradiohistory.com

NEW ARRIVALS

MORE ON THE ICOM R7000

After a tease of information was released to MT at the Dayton Hamvention, ICOM has finally made available a preliminary specification sheet on their magnificent new R7000 VHF/UHF scanning receiver, due for a late fall release.

With continuous frequency coverage from 25-2000 MHz and 99 memory channels, the receiver is bound to be a fast seller at an advertised retail price of $899. It will be available through Grove Enterprises on a first-come, first-serve basis until production catches up with advance orders (call for latest discount pricing).

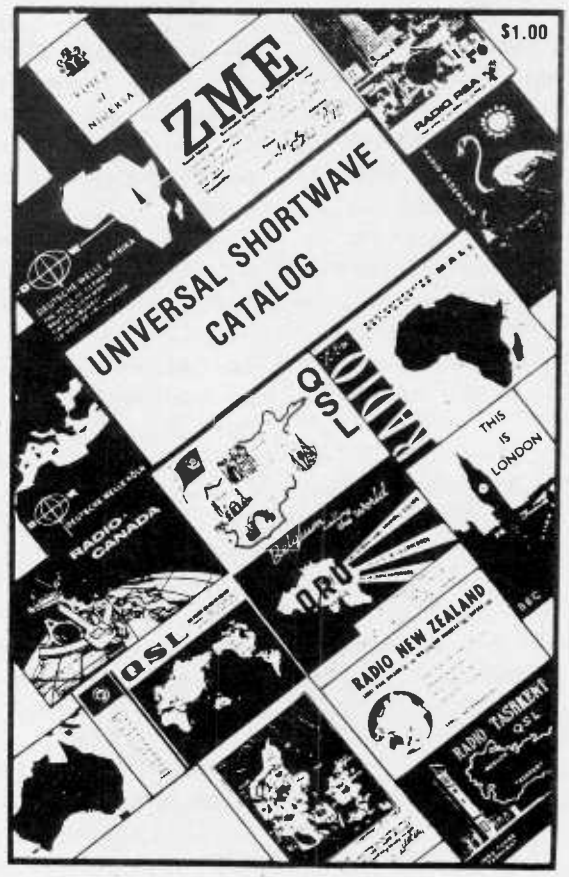
The R7000 is a striking look-alike to the R71A general coverage short-wave receiver and sports many of the same functions including S-meter, optional remote controller and voice synthesizer, noise blanker, frequency/memory keypad entry, continuous tuning dial, FM/AM/SSB modes, Narrow/wide filter selection, variable tuning speeds (0.1, 1, 5, 10, 12.5, and 25 kHz), and fluorescent frequency display to 100 Hz resolution.

As with the companion R71A short-wave receiver, the R7000 will be computer-addressable. The first 20 memory channels may be called to auto-lock onto the first 20 frequencies uncovered while searching for signals.

HUGE 70 PAGE

SHORTWAVE CATALOG

HUGE 70 PAGE



Send $1.00
(or 3 IRCs)
RE FUNDABLE.

UNIVERSAL SHORTWAVE RADIO
1280 Aida Drive
Reynoldsburg, Ohio 43068
Phone:614-866-4267

Fast Charger for Kenwood TH

The new Kenwood TH21, TH31 and TH41 hand-held transceivers have captured the imagination of the amateur marketplace. But the miniature size carries with it one drawback: shorter battery life. The Nicad pack supplied with the radio just doesn't have the capacity of larger units.

Now Charge-Rite has come to the rescue with a 15 minute fast charge unit which connects to any 12-14 volt supply (of at least 1 amp current capacity). Featuring constant current and automatic voltage cut-off, the compact charger assures safe, fast recharge without overheating the battery or developing "memory", limiting the peak capacity of the battery.

A sophisticated circuit prevents overcharging; you may leave the battery in the charger as long as you wish for trickle charge, awaiting the actual time of use.

(Fast Charger, $44.95 including shipping from Charge-Rite, P.O. Box 17015, Plantation, FL 33318, or call 1-305-475-0545).

"Superhound" Bug Detector

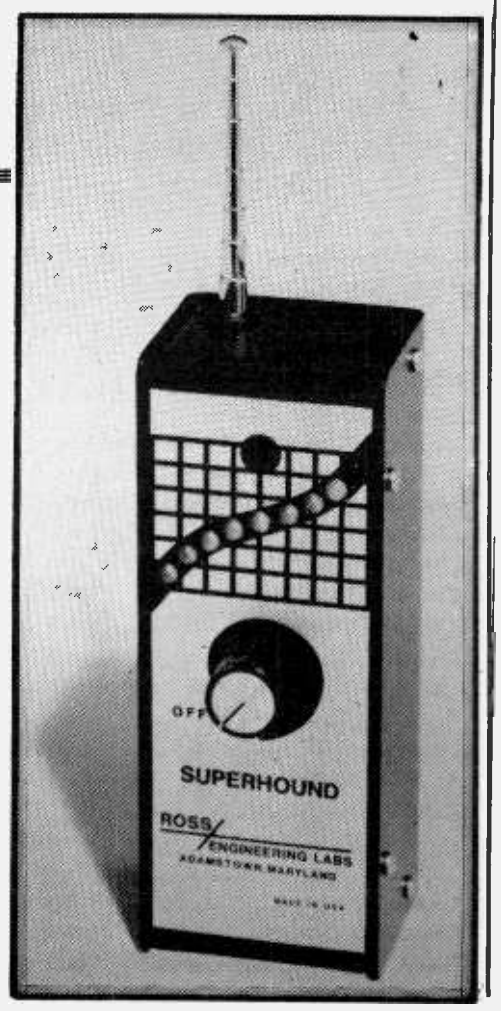
Having problems with bugs? That is, the electronic kind? Ross Engineering Associates (68 Vestry St., Dept. MT, New York, NY 10013; ph. 212-925-5022) may have an answer.

Their new "Superhound" is a broadband, high-sensitivity detector designed to sniff out and locate concealed transmitters on virtually any surveillance frequency.

Operating from a standard nine volt battery, "Superhound" announces its find in two ways: by illuminating a string of LEDs and by increasing the repetition rate of a clicking sound.

Virtually no training, other than basic familiarity with how small transmitters operate and where they may typically be planted, is required.

For further information contact the manufacturer.



Buggers and Buggees take note..

INTERESTED IN ELECTRONIC SURVEILLANCE?

There is considerable interest among scanner enthusiasts about electronic surveillance--bugs, remote beacons, countermeasures, and electronics snooping of every kind.

A small handful of professional groups hold seminars and offer home study courses of various competencies. One of the most widely advertised is Ross Engineering Associates (68 Vestry St., New York, NY 10013; ph. 1-212-925-5022).

The Ross group holds regular seminars on all aspects of electronic countermeasures at locations across the United States. Additionally, several reasonably-priced publications concerning the topic are available, some produced by Ross, others reprints of government documents.

In particular, two interesting titles, "Electronic Eavesdropping Techniques and Equipment" and "Electronic Surveillance," both reprints, are of particular help in orienting

www.americanradiohistory.com

CLUB CORNER

Paul Swearingen
P.O. Box 4812
Panorama City, CA 91412

September seems to be the time of the year for DX'ers that can be either a dud or spectacular. For FM/TV'ers, most E-skip openings have died down, but tropospheric enhancement can still be strong; for AM'ers, atmospheric noise is still a problem, but sometimes on quiet nights propagation can surprise you. The moral is not to wait until October to start DX'ing; some of my best catches have been in September.

June's column detailed a problem Chuck Boehnke (and I'm sure others) have had in negotiating the expensive maze of international exchange. He wondered if clubs could come up with a universal method of accepting currency, besides that of IRC's (which are fine for small amounts, but for a year's subscription -- how many baskets full?).

Mike Hardester, currently residing in Modesto, CA, after touring most of the world courtesy of the U.S. Navy, uses two methods to solve the problem: "Exchange rates for any country (well, most any country) can be found in the finance section of most large (LA **Times**, NY **Times**, **Wall Street Journal**...) newspapers. If you have the currency at hand (I still have a few thousand yen from my Navy tour in Okinawa), a quick calculation and you have the amount to send.

"But say you don't have the foreign currency--all is not lost. I normally ask a club if they will check with an American Express Office in their area and see if the office will accept an American Express money order (domestic kind - 35 cents). I have used such MO's to Australia, Denmark (WRTH Nxltr), South Africa, Japan, and a couple of others (oh yeah, Argentina) and no trouble. My trouble now is Modesto (120,000+ population) and no place to buy such MO's!"

Thanks, Mike. Has anyone else used another successful method to solve this problem? Let us know, and we'll pass your suggestions along.

A slight correction to my listing of **RADIOPHILES** - their membership affairs are handled by Steven Paradies, 18 Cornwall Ave., Millville, NJ 08332. $20 will net you a year's sub from this non-profit group which chronicles the happenings in the radio industry.

The deaths of Ken Brownless and Charles Molloy, sequential editors of **MEDIUM WAVE NEWS**, the bulletin of England's Medium Wave Circle, could have dealt a death blow to the club. Instead, Steve Whitt quickly stepped into the void, and the first edition under his editorship went out into the mail in late June. We wish Mr. Whitt the best of fortune in his new responsibility.

With Mike Knitter, publisher of the National Radio Club's **DX NEWS**, joining the ranks of equipment mailorder dealers, NRC treasurer Dick Truax has agreed to take over the club's external affairs, including that as ANARC rep. But the club continues adding to its endeavors with the NRC DX Audio Service for visually handicapped persons. Highlights from each issue of the club's bulletin are recorded on cassette tape; you can have a sample by sending $3.00 to P.O. Box 24, Cambridge, WI 53523.

The **ALL-OHIO SCANNER CLUB** has added 25 new members to its ranks since last April and general manager Dave Jones notes that approximately 30% of the new members are from outside of Ohio, in line with their recent decision to expand their bulletin's coverage to the states surrounding Ohio. If you'd like a sample copy, send a couple of bucks to AOSC, 1043 Princewood Avenue, Dayton, OH 45429.

AOSC's July-August issue contained an alert to Pennsylvania scanner users (you'll recall this state as the same one which in its wisdom forbids its prison inmates to use short-wave radios) regarding proposed legislation to deny use of scanner radios in vehicles. The warning came from Robert A. Hanson, Managing Director of the Scanner Association of North America. No address was included, but Mr. Hanson offered to send to state lawmakers an information package if you call him at (312)822-0622. The legislative proposal in question is State Senate Bill #637, introduced March 27, 1985.

DX'er Morris Sorensen informs us of a special exhibit on the history of man-made sound (musical instruments, record players, radio and television) on display at the **HOLTON REGION MUSEUM**, near Milton, Ontario, through late autumn. Contact him for more specific information at 111 Town Line, Milton, Ontario L9T 2X1 Canada, but be sure to include a self-addressed envelope and an IRC or Canadian postage.

NRC's Bruce Conti, in the July issue of **DX NEWS**, makes an interesting proposition for BCB DX'ers to share in a limited-time DX'ing contest much in the same way that the Nashua, NH, Area Radio Club and other regional ham radio clubs set up their nationwide field days. He felt that DX'ers across the country could set up DX sites and attempt to log as many stations as possible in a specific time period.

As he wrote about it in my column, "Musings," I took it upon myself to appoint him project coordinator to come up with specific rules. I think it's a great idea to help bring DX'ers together as well as to promote the hobby and I'd like to see DX'ers all over the world participate. Drop Bruce a line (Appleton Gardens, Apt. 5, New Ipswich, NH 03071) if you'd like to help out and don't forget the SASE.

ANARC has been forced to drop **HAP-USA** from its membership, as they failed to pay their association dues in time, according to the July **ANARC NEWSLETTER**, which arrived just before I sat down to peck out this column. I'll try to have more details for you next month, but it does appear that HAP-USA will continue to exist and serve its members.

Florida SWL's will be able to join a new **SPEEDX**-affiliated club under formation in that state. For details, send an SASE to David Sharp, 17602 Meadowbridge, Lutz, FL 33549.

SCADS will celebrate its 12th anniversary at the October 19 meeting at the Village View School, 5361 Sisson Drive, Huntington Beach, CA. SCADS Director Don Schmidt will be happy to furnish more information plus an area map if you send him an SASE at 3809 Rose Avenue, Long Beach, CA 90807.

If you're interested in joining a European DX club but need more information you can send three IRC's to **EDXC**, P. O. Box 4, St. Ives, Huntington, Cambs, England PE17 4FE. The European DX Council is quite similar to ANARC, serving as an umbrella organization for DX clubs in and near Europe.

The **ONTARIO DX ASSOCIATION** continues to break new ground in becoming the first (we think) DX club to solicit articles from members on a free-lance basis.

Briefly, if an article is reprinted and sold in leaflet or booklet form, the author will then receive 30% of the income during the first six months. On top of that, ODXA will offer a $2.00 credit voucher to each member responsible for a new member joining, applicable toward the purchase of club supplies and publications. Apparently the compensation for the reprinted articles will be in cold hard cash. Send your inquiries to Harold Sellers at 3 Camrose Crescent, Scarborough, Ontario, Canada M1L 2B5.

Ralph Shepherd of ODXA reports in the July issue of **DX ONTARIO** an informal experiment to gain new members. Ten copies of "The World of Short Wave Listening" were tacked to the bulletin board outside the basement cafeteria in Toronto City Hall where there is a very heavy traffic flow. After four months and 300 pamphlets only one membership and one known telephone inquiry resulted. However, seven memberships were secured at the Guelph Flea Market in early June, and Shepherd comments that a little arm-twisting proved to be very effective:

"...it's not enough to tell prospects all about SWL'ing and the ODXA; you have to make it easy for them to sign up and mail the application." The message to other clubs becomes obvious: a little sales work is necessary in obtaining memberships. Most clubs are glad to include a promo for other clubs in their bulletins on a periodic, space-available, reciprocal basis.

I'll throw in a little personal experience here. A year or so ago I sent a $2.00 check to a club I intended to join, asking for a sample copy of their bulletin. No reply...and not until a month or so ago did I find a new address for the club by chance. An inquiry letter netted me a prompt reply and only then did I

***SURVEILLANCE** cont'd*

the newcomer to the world of electronic espionage.

The first work analyzes the technical aspects of design of electronic eavesdropping equipment along with specific equipment applications, while the second booklet concentrates more on techniques and classes of equipment available to perform different covert tasks.

For more complete information on publications and seminars, write Ross Engineering Associates at the address above. ●

www.americanradiohistory.com

CLUB CORNER cont'd

join. The club had done a poor job in self-promotion.

A couple of days ago I had to send inquiry letters to two apparently worthy clubs who've never sent me any information about their organization so that I can pass it on to **MT** readers. As I've mentioned before, clubs who wish to attract new members would do well to study the methods used by clubs like ODXA and AOSC. The power of advertising is not a secret!

The **WORLD LISTENING SERVICE,** a station registry service, is celebrating its 25th anniversary by offering SWL's a commemorative QSL for a #10 SASE. You can write to them at P. O. Box 207, Audubon, NJ 08106, and I'm sure they'd provide more information abou their association in the SASE upon request. Thanks to FRENDX for the information.

And speaking of **FRENDX** --among **THINGS WE LIKE** is NASWA's "educational" approach to the hobby. Two of FRENDX's (NASWA's bulletin) columns in particular try to keep DX'ers abreast of what's happening. Gregory M. Bailey's "NASWA Novice" will cover, in future issues, such topics as "GMT and YOU," "Basic Antenna Construction," "Choosing Inexpensive Equipment," and other topics basic to the hobby.

Stephen G. Moye's "Contact" attempts to help improve the public's awareness of SWL. His July column contained several thought-provoking proposals, including one from Richard M. Oddie who suggested that the SW community engage in marketing research to aid SW programmers and manufacturers and ultimately broaden the public's awareness of the hobby. Contact NASWA at 45 Wildflower Road, Levittown, PA 19057 for more information.

WE DON'T LIKE the flip statement made by a long-time professional editor who should know better by now. The July issue of his publication referred to "a club operating out of Edmonton, Alberta" as being "too far on the fringe to be taken seriously anymore." I presume he is referring to CIDX, the only club I know of headquartered in Edmonton. CIDX is Canada's largest open SW club and a full member of ANARC.

It's one thing to examine the dangers of a club gone bad in a well-planned editorial, but to consign one to oblivion with no reason given is poor journalism. Our hobby deserves better treatment than that.

That's my last word for this month; I hope to hear from more new clubs and older ones so we can pass along information to **MT**'s readers. As always, the tenth of each month is your deadline; if you get details to me by September 10, you'll read about it in November's edition. 73. ●

INTERESTED IN HAM RADIO?

This Course May Be Your Ticket!

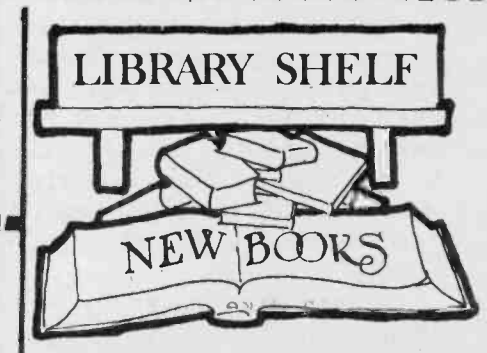
Gordon West, veteran writer on a variety of hobby and marine radio books and articles, is recognized as a leader in providing useful study materials designed to enable prospective amateurs to secure their licenses as quickly and painlessly as possible.

THE COMPLETE NOVICE is a new sure-fire study package based upon the successful teaching of 3000 hams in a recent local college program--and it even comes with a money-back guarantee if you don't pass!

While expensive when compared to other study packages, it is the most comprehensive course package we have ever seen. Stereo cassette tapes for both code practice and theory, books and forms, code practice oscillator and brass key, the actual test papers and instructions for the volunteer examiner.

With increased voice privileges about to be announced for Novice class licensees, ham radio should appeal to a larger group of radio hobbyists.

("The Complete Novice"; $49.95 plus $5 shipping and handling from Radio School, Inc., Dept. MT, 2414 College Drive, Costa Mesa, CA 92626)



ENCYCLOPEDIA OF ELECTRONICS edited by Stan Gibilisco (8-1/2" x 11", 1019 pages, hardbound; $60 TAB Books, P.O. Box 40 Dept. MT, Blue Ridge Summit, PA 17214)

Expensive? Yes. Worthwhile? Certainly, for the serious student of electronics who desires the best encyclopedic reference work on the market.

This new exhaustive compendium of electronics definitions is a must for institutions and libraries. Arranged alphabetically by topic, cross referenced and extensively indexed, it includes over 3000 key topics and is illustrated with more than 1300 photos, drawings, charts, formulas, and tables.

While compact technical dictionaries provide some orientation toward a term, the ENCYCLOPEDIA OF ELECTRONICS expounds in easy-to-understand terms upon a vast array of concepts.

As an example, a prominent $22 illustrated dictionary defines standing wave ratio in two sentences; the giant encyclopedia utilizes four paragraphs for comprehensive treatment, backed up by two illustrations.

For the consumate student who wants readable references, the new ENCYCLOPEDIA OF ELECTRONICS is made to order.

THE STRAIGHT SHOOTER'S GUIDE TO MARINE ELECTRONICS by Gordon West (8-1/2" x 11", paperbound).

Over 100 pages on maritime mobile radio as well as many pictorial diagrams on ham radio and marine electronic systems make this book good reading for the boat owner.

This book will give the ham radio mariner answers on how to evaluate current marine electronic systems, where to shop for the best price, what questions to ask, the ins and outs of warranties, and finally how to install the systems and use these modern computerized sets.

Chapters include depth

HEAR THE NEW BANDS ON YOUR SCANNER

Converts out-of-band signals to vhf or uhf scanner bands. Cables provided. Simply plug into scanner.

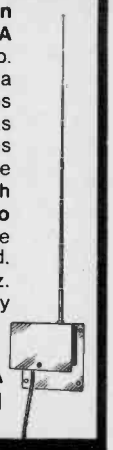
5 MODELS AVAILABLE:

806-894 MHz New Land Mobile Band
400-420 MHz Federal Government & FBI
240-270 MHz Navy/Air Force Satellites
135-144 MHz Weather Satellites
72-76 MHz Industrial & Radio Control

ONLY $88 + $3 S & H

DIG OUT WEAK SIGNALS

Get **clearer distant reception** using **ACT-1 POWER ANTENNA** instead of scanner's built-in whip. This compact 21 - inch antenna has **integral preamplifier,** gives up to 15 dB gain (30 times as strong), plus all the advantages of a high antenna away from noise pickup. **Often outperforms** much larger indoor antennas! **Easy to install** on any vertical surface indoors or out. No mast required. **Covers all bands:** 30 - 900 MHz. Complete with 50 ft. cable, ready to plug into scanner.



ACT-1 POWER ANTENNA ONLY $79 + $3.40 S&H

REJECT SCANNER INTERFERENCE BOOST DESIRED SIGNALS

Do **away with** i-f feedthrough, images, cross-modulation, and other interference. **Tunable 3-band VHF trap plus fixed i-f trap** eliminate undesired signals. **Low-noise preamp** digs weak signals out of the noise. **Adjustable-gain** preamp can be used alone or with traps, **giving you complete signal control freedom** for 110-960 MHz bands.

SA-1 SCANNER AMPLIFILTER ONLY $79 + $3.00 S&H

● Order by phone or mail. Use VISA or MC, check, COD. Or send $1 for complete catalog by return mail.

hamtronics, inc.
65-K MOUL ROAD
HILTON NY 14468-9535
Phone: 716-392-9430

www.americanradiohistory.com

LIBRARY SHELF cont'd

sounders, VHF and 2-meter transceivers, marine single sideband and ham radio HF transceivers, radio direction finders, Loran, satellite navigation, automatic pilots, radar, wind and speed equipment, and a directory of mail order marine electronic discount houses and a list of manufacturers and importers of marine electronic systems.

Installation suggestions apply to campers, mobile homes and vehicle installations, too.

$15.95 plus $3.00 for postage and handling from Radio School, Inc., 2414 College Drive Dept. MT, Costa Mesa, CA 92626.

INTERFERENCE HANDBOOK by William R. Nelson (#81-7388, 5-1/2" x 8", 253 pages, paperbound; $9.95 from Radio Publications, Inc., Box 149 Dept. MT, Wilton, CT 06897)

This newest (1984) edition of what is perhaps the best in-depth test on electrical interference is loaded with tips on handling noise.

Radio frequency interference (RFI) is a growing concern among listeners to the spectrum and a familiarity with its causes can be very helpful. Rather than sit back and complain, the reader of this new guide can actually take corrective measures at reducing the problem.

Chapters include locating the interference, laws concerning reduction, transmitter and computer generated RFI, line noise, static electricity, grounding, vehicle interference, and much more.

Well illustrated and equally well written, the INTERFERENCE HANDBOOK is a welcome addition to the electronic enthusiast's bookshelf.

BEAM ANTENNA HANDBOOK by William I. Orr and Stuart D. Cowan (#83-135, see above for size, price and ordering)

Written primarily for the ham, the BEAM ANTENNA HANDBOOK also contains substantial design and general information to be of interest to the short-wave and scanner listener as well.

While plenty of math is included it is restrained to the general algebraic and arithmetic equations necessary for computing dimensions. Tables, illustrations and photos make the reading material easier to follow and the language is in laymen's terms.

The main thrust of the book is the Yagi antenna, the classic "beam", with additional considerations of towers and feedline. Multiband and single band designs are included. A handy reference for the hobbyist who is inquisitive about how directional antennas work.

BUILD A PERSONAL EARTH STATION FOR WORLDWIDE SATELLITE TV RECEPTION second edition by Robert J. Traister (#1909, 5-1/2" x 8", 370 pages, paperbound; $14.95 from Tab Books, Dept. MT, Blue Ridge Summit, PA 17214)

Traister made quite an impact on the home TVRO (television receive-only) satellite market with his first edition in 1981 and this all new entry brings the reader up to date in terms of both equipment and available satellites.

The term "build" in the title may appear to be somewhat misleading; Traister's treatise is not a circuit assembly manual. Rather, it is a step-by-step approach to learning and assembling the appropriate components (antenna, low noise amplifier, feedline, converter, receiver, etc.) to do the job.

Several appendices provide excellent references for satellite frequencies and positions, sources for equipment, transponders and their occupants, and even a handy glossary of terms in the space age vernacular.

If you are ready to start from the ground up learning about home satellite TV terminals, this book by Traister has it all in a nutshell.

ICOM R71 PERFORMANCE MANUAL by Don Moman (8-1/2" x 11", 39 pages, spiral bound; $10 U.S. or Canadian airmail; 25 IRC's elsewhere from Shortwave Horizons, 6815 12th Avenue Dept. MT, Edmonton, Alberta, Canada T6K 3J6)

There is little doubt that the ICOM R71A is the new standard of comparison among general coverage short-wave receivers, and with good reason. It provides just about any function that a listener could want, regardless of his mode of interest.

The owner's manual which accompanies the receiver from the factory is admittedly lacking in many respects, including accuracy; the large maintenance manual available at additional charge is unyielding in detail. Moman's new PERFORMANCE MANUAL is written for the technically competent experimenter who doesn't mind taking hold of a soldering iron and making a few worthwhile modifications.

Improvements covered in the manual include sensitivity, selectivity, overload protection, frequency slewing, front panel improvements, and alignment procedures.

For only $10, this manual is a goldmine of information for the R71A enthusiast! ●

TUNE IN WITH Ed Noll

OLD-TYME STATIONS

Modern radio broadcasting had its start in the early 20's. Of course, there were many experimental and some quite active professional-like stations on the air prior to this time. However, the 20's saw the systematic allocation of stations and frequencies as well as a profound growth in the technical and commercial aspects of the science.

In those very early days many stations were owned and operated by stores and the major objective was to encourage the buying of radio receivers. Other businesses, too, had stations but the business itself was the main reason for the station. Some stations were associated with newspapers, religious groups, technical schools, and colleges.

Into the 20's the activities of radio broadcasting evolved around electrical/electronic corporations, radio networks, newspapers, etc. with direct interests in the field, consumating eventually in the selling of radio advertising time.

Some broadcast band listeners enjoy reaching back to those days by logging old-tyme stations and calls. There has always been a special interest in the stations with three-letter calls, the last of which were allocated sometime during the 30's.

A listing of some of those oldie stations is given in the accompanying table. Listed stations came on the air 1922 or before and some of them still have their original call letters. Of course, there were many old broadcast allocations that occurred during the remaining years of the 20's and into the early 30's, all more than 50 years old. You may dig these out, too.

Start your activity by logging all of the old-tyme stations in your state and then spread out to adjacent states and across the country. Old-station logging is another one of those interesting hobbies within a hobby.

Some listeners are especially interested in three-letter calls because over the years there has been a gradual attrition of these calls as new owners request a change to four-letter calls. Try to obtain some three-letter call verifications.

Some years ago a long-time friend and radio listener, Harry Mullen, handed me a little booklet called the RADIO RECORD BOOK published originally by Brown and Bigelow of St. Paul, Minnesota. We spent much of the evening enjoying its contents. I stowed it away in my desk never realizing we would have this opportunity to share some of it with you.

There was no printing date. However, by searching the histories submitted by a number of radio stations across the country as well as data available from the National Radio Club and Broadcasting Magazine, the date of the publication has been narrowed to 1923 or 1924.

Some of the listed stations are active today and are a part of the included table. There are omissions and inconsistencies but it is generally complete. A number of the stations no longer exist.

The table lists the present call of each of the old-tyme stations. It may be the original call or it may be a different one from the original allocation. Just two examples demonstrate that possibility.

For example, KSL in Salt Lake City originally started as KZN in 1922 while WGN in Chicago began as WDAP in 1922. The above is an example of the poignant trivia you can dig out in

www.americanradiohistory.com

ED NOLL cont'd

your search in addition to just picking up the signal.

A good way to begin the project is to use your NRC domestic log to prepare a list of the active three-letter call stations. You can begin with your own state and adjacent states as well as the long-distance, high-powered stations that have three-letter calls. Many of them are clear-channel stations.

You may wish to become involved in the history of some of these stations. Go on from there to pick up the lower-powered ones and especially keep them in mind whenever you take a trip.

There are a number of interesting facts in the old log. Ownerships prior to the days of networks and emphasis on selling time usually served some hobby or utilitarian need of the owner. If any selling was done it was to sell radios to the public.

Some stations were owned by department stores to sell their radios and other items. Colleges and experimentalists operated stations to gain experience with radio and to further the science.

Considering the number of stations active long ago, there were only a few frequencies used. Stations shared time and often the same transmitter and same antenna system. Hours of operation were limited. Sometimes one station used two separate frequencies in the same city. Daytime and nighttime frequencies often differed.

Power ratings ranged from 5 to 1000 watts. Despite low power and low receiver sensitivities, signals were copied over thousands of miles and even across oceans.

The long-distance possibility was enhanced by three factors: There were fewer stations on the air and they usually signed off somewhere between 10 pm and midnight; consequently, frequency space was opened for the reception of longer-distance signals.

The third reason was the transmitting antennas used in those days, largely horizontal wires. The two major modes of propagation on the broadcast band are ground-wave and sky-wave. Ground-waves propagate immediately over the ground, radiating outwardly from the transmitting antenna.

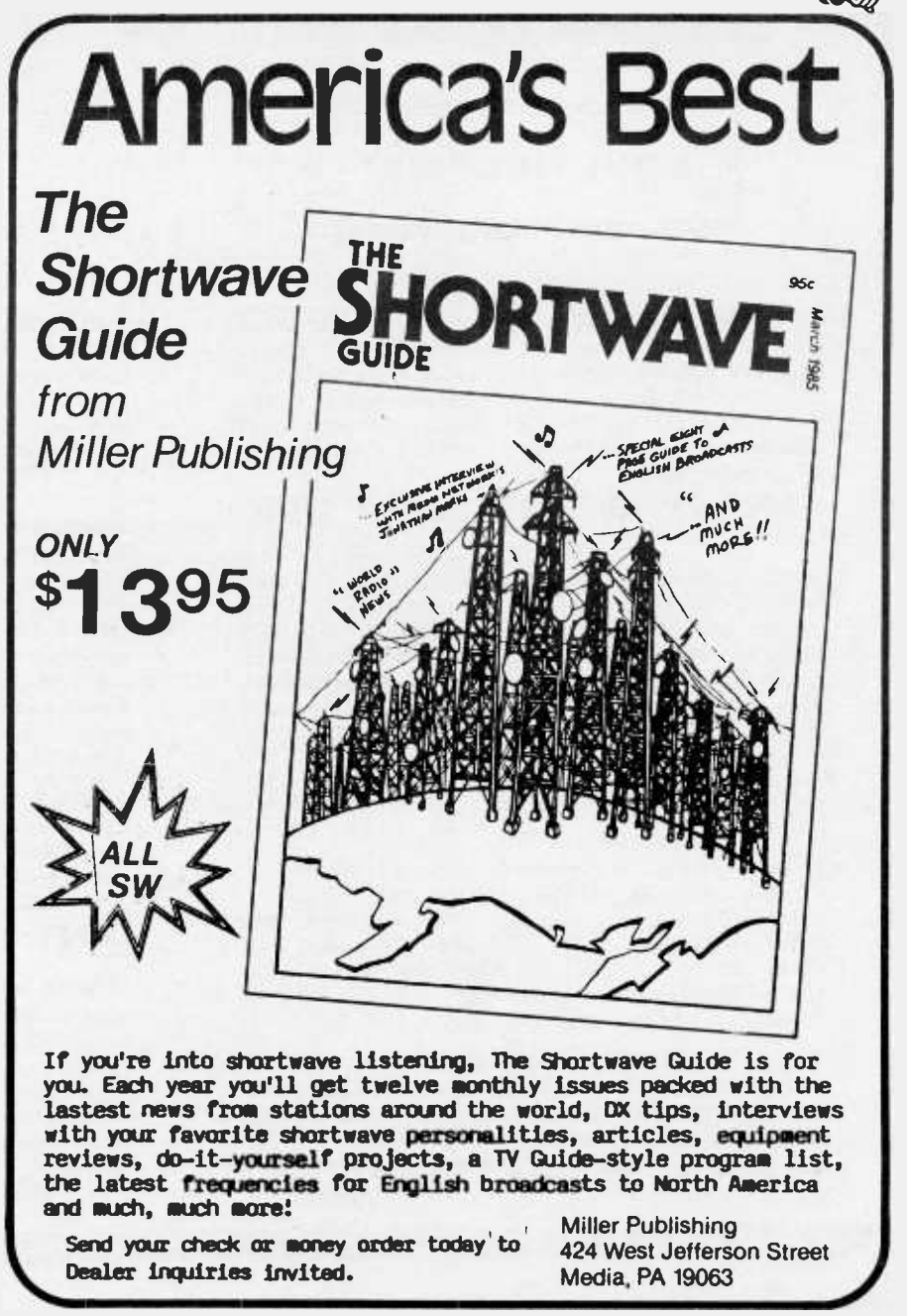
In the old days it was this sky-wave transmission that provided long-distance reception. In many practical situations the signal delivered at medium distances of several hundred miles were poorer than received a thousand miles away.

The vertical transmitting towers of today emphasize ground-wave propagation to obtain a reliable primary (local) coverage area. Using appropriate power, a reasonable secondary area coverage is obtained for regional stations and clear-channel stations. In the case of the clear-channel stations and their higher power there is effective sky-wave long-distance transmission at night.

Stations in the table are listed alphabetically by state. Give a look at the stations that operated in those bygone days in your city. Do a little research and come up with the history profiles of some of the old stations serving your area.

OLD-TYME STATION CHART

Alabama	
WAPI	1070
Arizona	
KOY	550
KTAR	620
Arkansas	
KLCN	910
California	
KRE	1400
KHJ	930
KNX	1070
KFI	640
KDIA	1310
KNEW	910
KFBK	1350
KCNN	1360
KCBS	740
KEST	1450
KNBR	680
KWG	1230
Colorado	
KVOR	1300
KIMN	1150
KLZ	560
KFKA	1310
Connecticut	
WDRC	1360
Delaware	
WDEL	1150
Florida	
WQAM	560
WDAE	1250
Georgia	
WGST	920
WSB	750
WMAZ	940
WPAX	1240
Hawaii	
KGU	760
Idaho	
KFXD	580
Illinois	
WCAZ	990
WJPC	950
WMAQ	670
WDZ	1050
Indiana	
WSBT	960
WBAA	920
Iowa	
WOI	640
WMT	600
WOC	1420
KSO	1460
WSUI	910
Kansas	
KFH	1330
Kentucky	
WLAP	630
WHAS	1340
Louisiana	
WWL	870
KEEL	710
Maryland	
WCAO	600
WFBR	1300
Massachusetts	
WBZ	1030
WEZE	1260
WRKO	680
WSAR	1480
WNBH	1340
Michigan	
WJR	760
WWJ	950
WKAR	870
WFDF	910
Missouri	
KMBZ	980
WDAF	610
WHB	710
KSD	550
WIL	1430
Montana	
KEIN	1310
Nebraska	
WJAG	780
KCRO	660
New Hampshire	
WKZU	1350
New Jersey	
WWDJ	970
WIMG	1300
New Mexico	
KOB	770
New York	
WGR	550
WHCU	870
WABC	770
WHN	1050
WOR	710
WNBC	660
WHAM	1180
WGY	810
WFBL	1390
WSYR	570
WHAZ	1330
North Carolina	
WBT	1110
North Dakota	
WDAY	1410
Ohio	
WKRC	550
WLW	700
WHK	1420
WBNS	1460
WCOL	1230
WOSU	820
WING	1410
WSPD	1370
Oklahoma	
WWLS	640
KOCY	1340
KOMA	1520
WKY	930
Oregon	
KAST	1370
KMED	1440
KGW	620
Pennsylvania	
WSAJ	1340
WKBO	1230
WLPA	1490
KYW	1060
WCAU	1210
WFIL	560
KDKA	1020
KQV	1410
WJAS	1320
WTAE	1250
WRAW	1340
WEJL	630
WBAX	1240



www.americanradiohistory.com

Save 25%

LUCKY LIST

Plug into fantastic bargains on Grove pr
quickly your listening "luck" improves.
September 15 only. See Grove catalog fe

Shortwave Listener?

If you want to hear it all, you need:

Spectrum Probe

OR

Mini Tuner

Your Receiver

★ **SKYWIRE:** Simply the best, inexpensive, short wave dipole made for the serious listener. 66 feet in length, may be adjusted for smaller homesites. Includes porcelain insulators, heavy-duty stranded element wire and professional SO239 connector assembly for your coax. Guaranteed to outperform more expensive trap dipoles on all frequencies.

(ANT-2) ~~$19~~ $14.25 plus $1.50 UPS

★ **SPECTRUM PROBE:** Scarcely two feet high, this low-profile amplified antenna outperforms many full-sized dipoles and random long wires! Covers 10 kHz-1000 MHz and may be used with up to three receivers simultaneously. Works best on your roof top or mast but provides good reception indoors as well. Complete with 50 foot of coax, control unit, power supply, and all accessories.

(ANT-9) ~~$99.95~~ $75.00 plus $3 UPS

★ **COAXIAL CABLE:** Highest efficiency, lowest cost RG-6/U available in 50, 100, 200 and 1,000 foot lengths.

CBL2—50 foot ..... ~~$7.00~~ **$5.75 plus $2 UPS**
CBL3—100 foot ..... ~~$14.95~~ **$10.50 plus $3 UPS**
CBL4—200 foot ..... ~~$29.95~~ **$20.00 plus $3.50 UPS**
CBL5—1000 foot ..... ~~$99.00~~ **$74.25 plus $10 UPS**

★ **CONNECTOR KIT:** Virtually every connector and adaptor you will need for shortwave and scanner installations—UHF (PL-259), BNC, F, interconnect cable, coax seal, instructions.

(CK1) ~~$9.95~~ $7.50 free UPS

★ **MINITUNER:** Eliminate images and intermod interference (100kHz-30MHz) when using external antenna with Kenwood, Yaesu, Sony, Panasonic, Radio Shack, Uniden and similar shortwave receivers (not necessary with Icom R-70, R71A or NRD 515).

(TUN3) ~~$39~~ $29.95 plus $2 UPS

★ **SCANNER BEAM:** Capture those elusive distant signals with the highest gain (up to 8 dB) antenna made. This power signal grabber boosts your receiver's range 50-100 miles or more. Covers 25-54 MHz low band, 108-136 MHz aircraft, 136-174 MHz high band, 216-400 MHz navigational and military aircraft, 400-512 MHz government and UHF services, and 806-960 MHz cellular communications. May be used for transmitting applications as well (up to 25 watts). Recommended for use with light weight TV rotator to pinpoint distant targets.

(ANT-1B) ~~$40~~ $30 plus $3 UPS

★ **OMNI SCANNER ANTENNA:** General purpose omni-directional antenna for all scanners—low, high, and UHF bands. Slim profile (96" tall); light weight.

(ANT-5B) ~~$19~~ $14.25 plus $3 UPS

★ **SIGNAL AMP:** Put this high gain, low noise scanner booster where it does the most good: right at the antenna before weak signals are lost and unrecoverable through the coax. Especially useful for scanner enhancement above 400 MHz and long (100 feet or more) coax runs. Complete with control module, power supply and accessory hardware.

(PRE-2) ~~$59~~ $44.25 plus $2 UPS

BOOKS

SHORTWAV

By Bob Grove. Domestic and foreign freque include U.S. and foreign Air Force, Navy, Coast embassies, FBI, spies and smugglers, pirates an facsimile, INTERPOL, and much, much more— 3-ring binder.

BOK-14 ~~$12.95~~ $9.75 plus $1.50 UPS or bookrate

LOW BAND S

By Chuck Robertson. The 30-50 MHz portic communications, many from outside the United U.S. police dispatchers? Where are those tacti strange whistles and tones on certain channe communications? Where are the law enforcemer

BOK-7 ~~$5.95~~ $3.75 plus $1.50 UPS or bookrate

THE BEST OF M

In answer to your overwhelming requests for re we have extracted the most popular and infor easy-to-read book form.

BOK-9, 56 Pages, 1982 Anthology ~~$5.95~~ $4.50
BOK-10, 80 Pages, 1983 Anthology ~~$7.95~~ $6.00
BOK-11, 140 Pages, 1984 Anthology ~~$10.95~~ $8.25
ALL THREE BOOKS FOR ~~$20~~ $15

COMMUNICAT

By Larry Van Horn. Chapters cover spy and su missions, military tactical and scientific satellites, communications satellites, private and direct bro *SATELLITES* tells you about it! This ultimate dire channelization band plans, transponder indentifi satellite development.

BOK-15 ~~$12.95~~ $9.75 plus $1.50 UPS or Bookrate

ANTENNAS F

By Wilfred N. Caron. The most comprehensive frequency ranges. Introductory chapters provide the nature of antennas and transmission lines. design from the lowest to the highest frequencies beams, loops, shortened antennas, active antenn

BOK-6 ~~$12.95~~ $9.75 plus $1.50 UPS or Bookrate

WORLD RADIC

39th Edition, 1985 printing. Acclaimed by expe book of international broadcast monitoring. A g schedules, beam headings and other pertinent world—longwave, medium wave and shortwav bookshelf of every serious shortwave listener.

~~$15.95~~ $12.00 plus $1.50 UPS or Bookrate

WORLDWIDE WEA

By Bert Huneault. Twenty-two information-pa hurricane hunters, coastal stations, ships at sea weather information around the globe. Frequency

BOK-2 ~~$4.95~~ $3.75 plus $1.50 UPS or Bookrate

LISTENERS

Professionally padded for convenient monitori reference. Ideal for SWL's, scanner listeners, DXe entries. Standard 8½" x 11".

BOK-4 ~~$2.95~~ $2.25 plus $1.50 UPS or Bookrate

★ **POWER ANT:** Can't get up to antenna but still boost those signals? Catch those elusive stati this power (30 dB mid range) booster on any May be used with any outdoor scanner antenn our ANT-3 plug-in whip ($4.95) for indoor use.

(ANT-4C) ~~$49~~ $36.75 plus $2

★ **SCANNER FILTER:** Rejects interference from hams, mobile telephones, etc. Adjustable 80-2 500 MHz.

(FTR) ~~$29~~ $21.75 plus $2 U

Still not sure what you n
Call 1-704-837-9200 and
the expert, Bob Grove

www.americanradiohistory.com

ENER SALE

ucts and literature, and then notice how ale prices effective August 15 through complete descriptions.

For Master Card and Visa orders please call:

1-800-438-8155

(8 a.m. to 5 p.m., Eastern Standard Time)

BOOKS

RECTORY

sts, 1.6-30 MHz. Approximately 6,000 listings Army, energy, emergency, State Department, destines, aircraft and ships, space, RTTY and anged by agency. Looseleaf pages drilled for

DIRECTORY

the spectrum often explodes with intriguing as well as within. Whose repeaters retransmit litary maneuvers taking place? What are the ho is being protected by those diplomatic missions coming from?

ORING TIMES

of important past articles in Monitoring Times, articles and have reprinted them in handy,

SATELLITES

nce satellites, U.S. and Russian manned space ographic and water satellites, navigational and satellites; if it is in orbit, *COMMUNICATIONS* f space communications includes chapters on international satellites, even a history of earth

ECEIVING

uthoritative book on receiving antennas for all theory on the generation of radio waves and essive chapters cover antennas and feedline n your own dipoles, ground planes, discones, ers and matching networks and more.

HANDBOOK

d hobby listeners alike as the ultimate source ollection of frequencies, addresses, program concerning every major radio station in the 300-page standard reference found on the

R BROADCASTS

pages explain the radio shorthand used by her agencies transmitting urgent and official s are included.

SHEETS

st use. Drilled for looseleaf filing and ready d surveillance records. Enough for over 1,000

to
ith
er.
ith

S

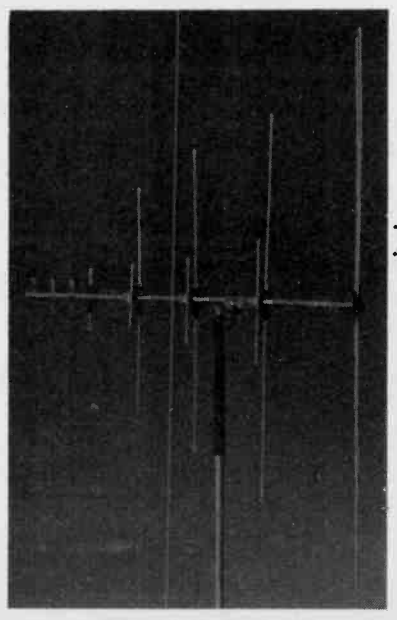
aft,
00-

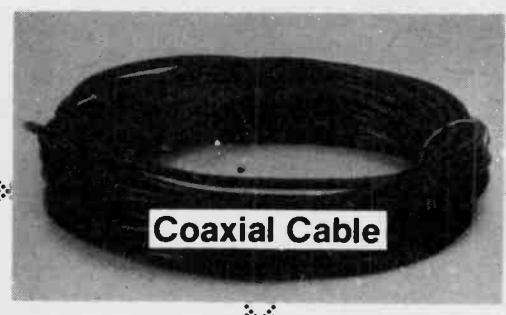
?

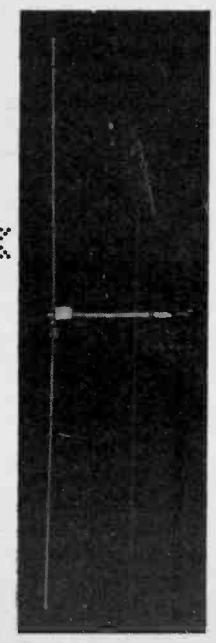
Scanner Buff?

You won't miss that once-in-a-lifetime transmission if you use:

Scanner Beam ⟷ *OR* ⟷ **Omni**



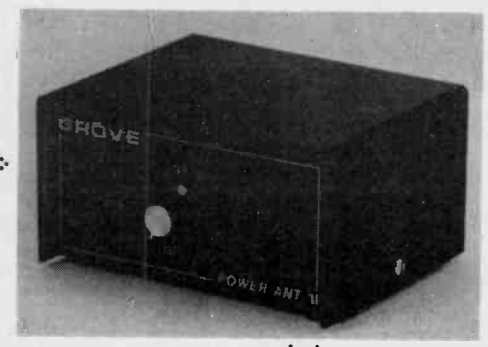




Signal Amp

(Choice of Signal Amp or Power Ant depends on use with antenna; see descriptions at left).

Power Ant



Scanner Filter

Your Scanner

Going Mobile?

★ **UNIVERSAL FULL LENGTH ANTENNA FOR HAND-HELDS:** Replace that range-limited rubber ducky with a full-size whip (7-46"). Ideal for all handheld scanners and transceivers. Standard BNC base. Guaranteed to increase range.

(ANT-8) ~~$12.95~~ $9.75 plus $1.50 UPS

★ **MOBILE SCANNER ANTENNA:** Low-profile, (18" high) operates as a helical quarter wave antenna on low band, full length 1/4 wave on high band and a 2dB collinear gain antenna on UHF.

(ANT-10) ~~$25~~ $18.75 plus $2 UPS

GROVE ENTERPRISES

P.O. Box 98
140 Dog Branch Road
Brasstown, N.C. 28902

www.americanradiohistory.com

CREATIVE CALL LETTERING--
an informative insight

by Ken Wood

Call letters as a means of identification for radio stations are nearly as old as radio broadcasting itself. And many broadcast stations, perhaps most, have put considerable thought into what call letters should be selected for a new station or to reflect a change of ownership in an existing station.

Call letters have, throughout most of radio's history, usually celebrated the initials of the station owner, whether those of an individual or a corporation as in WABC - American Broadcasting Company. Sometimes the call represents an abbreviation for a city or area, as in KSMO - Salem, Missouri.

In more recent years call letters have been chosen more with their promotability in mind (It's a dog-eat-dog world out there!). Calls may spell out a word such as KISS or KICK or be chosen so that they can be referred to in a memorable way, as in WWWE - 3-W-E. Or, they are picked with visual promotability in mind, as in KFOX with an animal character employed as a promotional gimmick.

Sometimes it's carried so far as to get someone dressed up in costume to represent the station. The San Diego chicken is probably the best known example, although they aren't always based upon a station's call letters.

FM stations led the way towards reducing the use of assigned call letters on the air with slogans like "K-107" employed except at legally required station identification times.

The FCC's move to deregulate radio has led to less demanding rules governing call letter usage which, in turn, has led to a greater use of station slogans in domestic aural broadcasting, much like the situation in Latin America.

A good argument could probably be made that the U.S. practice of making call letters meaningful spread to other countries. It's not as easy for broadcasters in other nations, however.

Most of the governments of countries in Europe, Asia and Africa don't even assign call letters to stations so a wishful broadcaster is shot down before he starts. One example, however, is ELBC - the Liberian Broadcasting Corporation.

A potential station owner in Central or South America has a little better opportunity, depending upon which country he calls home. You can't do much, after all, if calls in your country are made up of an international prefix and two numbers, as in Bolivia, or three prefix letters, a single number and then a single letter, as in Peru; or three prefix letters and two or more numbers, as in Brazil. Other countries, such as Venezuela with a two letter prefix and two letter suffix should offer half a chance, but apparently Venezuelan authorities don't take station call letter requests into consideration in assigning calls as there do not seem to be any with obvious meanings in the listings.

Perhaps the best known meaningful call on shortwave is HCJB--"Heralding Christ Jesus' Blessings." Others in Ecuador include HCVN - La Voz del Napo; HCRP - Radio Pastaza; HCVS - LA Voz de Sasquisili; HCER - Escules Radiofonicas; and the station in the Galapagos Islands, HCVG - La Voz de Galapagos (the numeral at the end of each Ecuadorian call was left off here for simplicity's sake).

Costa Rica offers TIFC - Faro del Caribe; TGNA - Telling the Good News Abroad; TGVN - La Voz de Nahuala; TGCH - Radio Chortis; TGTZ - Radio Tezulutlan; and TIHB - (Radio Reloj) for Hermanos Barahona, the Barahona brothers who founded and own the station.

Mexico has XERMX - Radio Mexico; XECMT - Ciudad Mante; and XEUDS - Universidad de Sonora. Up north there's CHNS - Halifax, Nova Scotia (relayed on shortwave by CHNX) and CFVP - the Voice of the Prairies.

Under FCC jurisdiction, KNLS in Alaska stands for New Life Station, WINB for World International Broadcasters, WYFR for Your Family Radio, and WNYW for Radio New York Worldwide. KGEI still honors its original owner, General Electric, and WRNO is, of course, The Rock of New Orleans. On Saipan KYOI's call is a contraction of a Japanese word meaning "joy" and on Guam, Trans World Radio employs KTWR.

The new United States short-wave stations have given thought to their call letters too. WMLK is a contraction of the word "malek" or "messenger" and NDXE in Alabama is meant to be pronounced "in Dixie."

Shortwave broadcasters may not find the country to country situation conducive to making meaningful call letters but many try where it seems feasible. There are probably many short-wave calls in use which have meanings not apparent without an explanation from the station itself. It might be a fun DX sideline to try to decode those which aren't obvious. ●

ED NOLL cont'd

Rhode Island	
WEAN	790
WHJJ	920
South Dakota	
KUSD	690
Tennessee	
WNOX	990
WREC	600
Texas	
KNOW	1490
WTAW	1150
KAAM	1310
KFJZ	1270
WBAP	820
KILE	1400
WOAI	1200
WACO	1460
Utah	
KSL	1160
Vermont	
WVMT	620
Washington	
KRKO	1380
KGY	1240
KWSU	1250
KJR	950
KKFX	1250
KMPS	1300
KHQ	590
KSPO	1230
KXLY	920
KMO	1360
Wisconsin	
WLBL	930
KFIZ	1450
WHA	970
WISN	1130

●

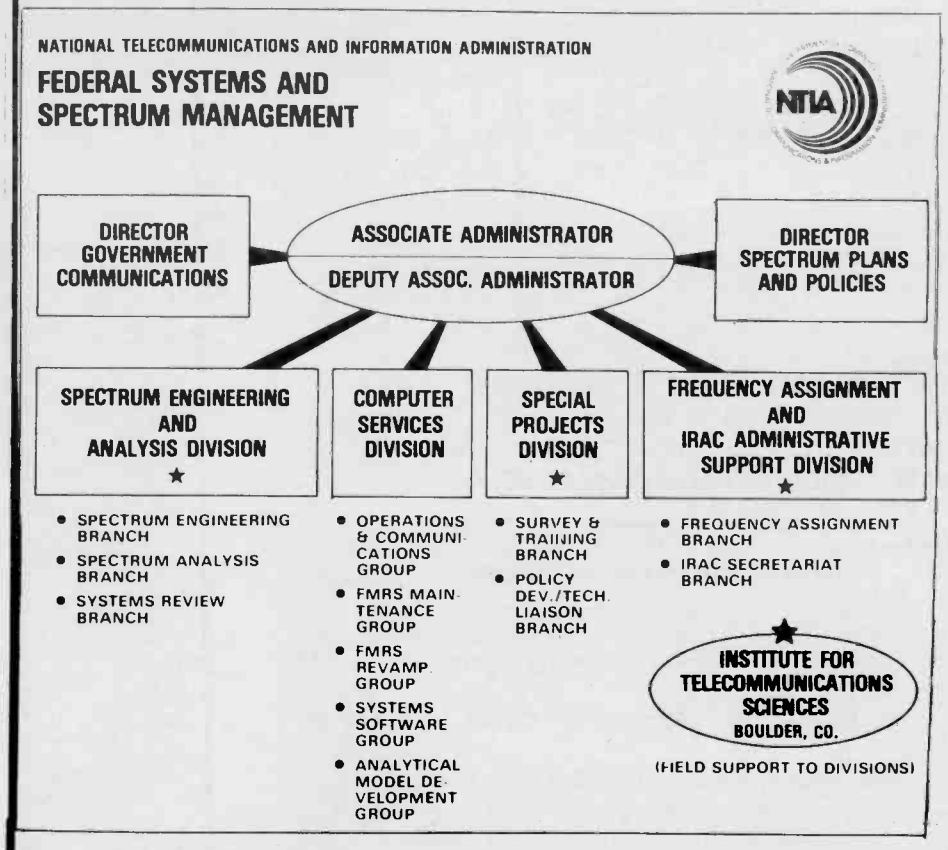
Who Are the Federal Users of the Spectrum?

by Bob Grove

While all of us are familiar with the Federal Communications Commission (FCC), that agency which regulates civilian communications--everything from our favorite radio and TV broadcasts to amateur radio and business band as well as police and fire--few of us know the inner workings of the agency which regulates the federal agencies found throughout the electromagnetic spectrum.

The Interdepartment Radio Advisory Committee (IRAC) is a branch of the Department of Commerce; its purpose is to manage radio frequency matters involving federal agencies. Their efforts are coordinated by the National Telecommunications and Information Administration (NTIA).

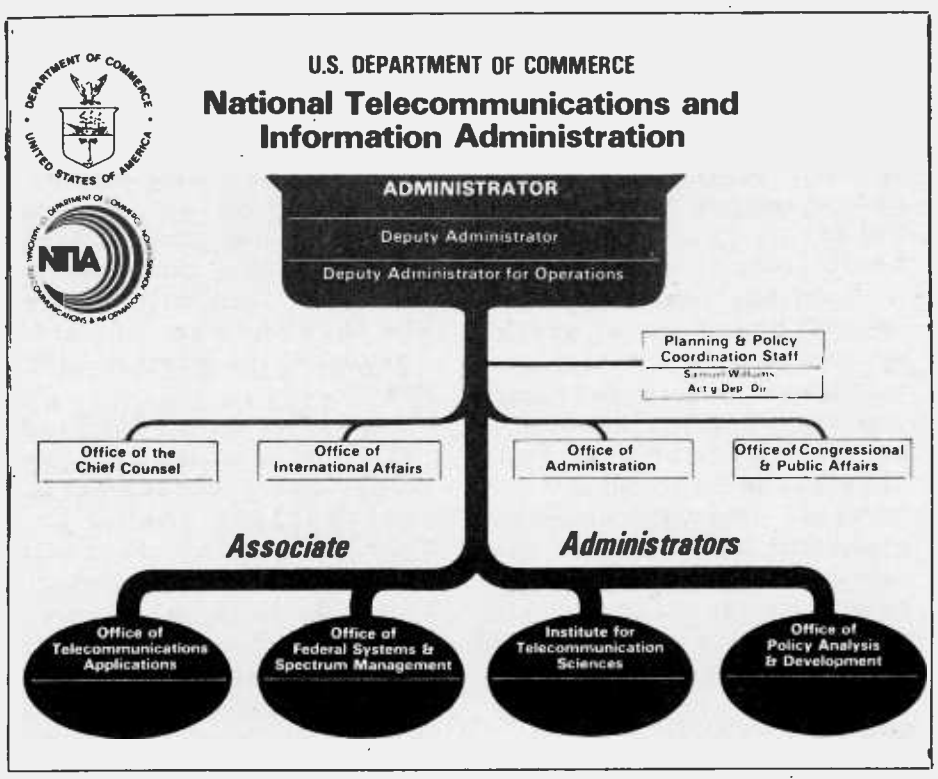
The chart of organization for IRAC and the NTIA are shown below.



But just who uses the frequencies, and in what proportions? The list below shows a recent tally of all government agencies and their participation in the IRAC allocations.

www.americanradiohistory.com

FEDERAL USERS cont'd



DEPARTMENT OR AGENCY	NUMBER OF ASSIGNMENTS	% OF GOVT MASTER FILE
AGRICULTURE	11145	5.60
AIR FORCE	26731	13.34
ARCHITECT OF THE CAPITOL	5	.0025
ARMY	25745	12.85
ADMIN OFC OF THE U.S. COURTS	7	.0035
COMMERCE	4665	2.33
COMMODITY FUTURES TRADING COMM.	8	.0041
COAST GUARD	9837	4.91
CENTRAL INTELLIGENCE AGENCY	404	.202
CONSUMER PRODUCTS SAFETY COMM.	1	.0005
DEPARTMENT OF ENERGY	6460	3.22
DEPARTMENT OF EDUCATION	3	.0015
ENVIRONMENTAL PROTECTION AGENCY	313	.1633
FEDERAL AVIATION ADMINISTRATION	25770	12.86
FEDERAL COMMUNICATIONS COMM.	771	.385
FEDERAL EMERGENCY MANAGEMENT AGCY	993	.495
FEDERAL HOME LOAN BANK BOARD	1	.0005
FEDERAL MEDIATION CONCILIATION SVC	8	.0041
FEDERAL RESERVE SYSTEM	98	.0496
GOVERNMENT ACCOUNTING OFFICE	2	.0100
GOVERNMENT PRINTING OFFICE	3	.0015
GENERAL SERVICES ADMINISTRATION	557	.2834
HEALTH AND HUMAN SERVICES	1506	.7523
HOUSE OF REPRESENTATIVES	5	.0020
HOUSING AND URBAN DEVELOPMENT	3	.0015
INTERIOR	14778	7.37
INTL BOUNDARY & WATER COMM	76	.0389
INTERSTATE COMMERCE COMMISSION	1	.0005
JUSTICE	15533	7.75
LABOR	87	.0443
LIBRARY OF CONGRESS	4	.0020
NAVY	30264	15.10
NASA	1323	.66
NON-GOVERNMENT	9162	4.57
NATIONAL GALLERY OF ART	13	.0065
NUCLEAR REGULATORY COMMISSION	468	.233
NATIONAL SECURITY AGENCY	203	.101
NATIONAL SCIENCE FOUNDATION	158	.079
NATL TRANSPORTATION SAFETY BOARD	0	0
OFFICE OF ADM-EOP	1	.0005
U.S. OFFICE PERSONNEL MANAGEMENT	0	0
OFFICE OF TECHNOLOGY & ASSESSMENT	1	.0005
STATE	161	.08
SUPREME COURT	2	.0010
SECURITIES & EXCHANGE COMMISSION	2	.0010
U.S. SENATE	2	.0010
SMITHSONIAN INSTITUTION	140	.069
TREASURY	5937	2.96
TRANSPORTATION	1349	.72
TENNESSEE VALLEY AUTHORITY	1444	.74
U.S. CAPITOL POLICE	17	.008
U.S. INFORMATION AGENCY	1044	.521
U.S. POSTAL SERVICE	1166	.582
VETERANS ADMINISTRATION	2031	1.01

ALASKAN HF SSB

by Mark Springer, WL7BCT

Up here in Alaska, a state nearly half a million square miles big, it gets tough keeping in touch sometimes.

Suppose you're out on the mining claim 200 miles north of Fairbanks and you need to get a new part for the D-9 Cat. You just don't walk up to the nearest phone booth. What you do is to go back to the cabin and fire up the SSB radio.

Alaska is authorized a special service by the FCC: The Alaska Public Fixed Radio Service. Under this service anyone living in Alaska can get a station license and operate HF radios for personal communications. There are public common carrier stations in Fairbanks, Anchorage, Juneau, Kodiak, Ketchikan, and Cordova providing interconnect services into the telephone system.

The new Alaska Calling and Emergency frequency 5167.5 kHz USB, should see a lot of use this summer. The old frequency, 4383.8, was only authorized for emergency traffic so nobody really monitored it. By the way, amateurs in the KL7 district are also authorized to use the new frequency in emergency situations and to intercommunicate with the Public Fixed Service.

Another change that came about this last year was a new rule allowing use of location calls rather than call signs. So don't be surprised if you hear "Claim Creek Camp" calling "Nenana Fuel" on 5167.5.

Most of the stations use small, 150 watt radios with multi-element dipoles and automatic tuners. They certainly won't be booming into the Lower 48, but you should be able to snag the commercial licensees.

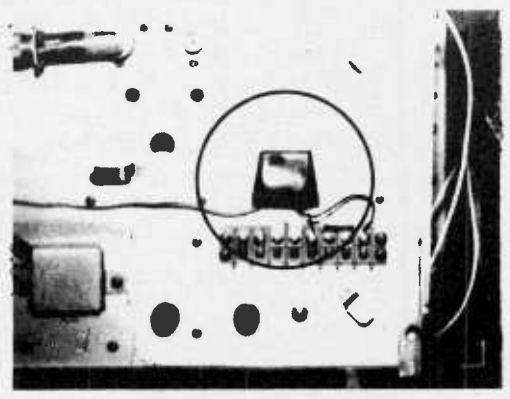
The State of Alaska Division of Emergency Services is authorized use of 5135.0 for tests and emergencies; other users include the far-flung school districts, air taxi services and barge companies.

The following list of SSB frequencies have been heard in use here in Alaska in the public fixed (point-to-point) radio service.

ALASKA PUBLIC FIXED RADIO SERVICE

Freq kHz	Note
1643	
1646	
1649	
1652	

ATTENTION R390 AND 390A OWNERS



INCREASE YOUR CAPABILITY FOR

$29.95

G. B. Communications Adapter Installed

THIS ADAPTER WILL INCREASE THE CAPABILITY OF YOUR RECEIVER SO YOU CAN RECEIVE SSB, CW, AND RTTY WITHOUT DISTORTION.

- Easy to install in under 2 minutes
- No drilling, soldering, or gluing
- All solid-state components
- Completely sealed
- Money back guarantee

Call for information or order your adapter today:

G. B. COMMUNICATIONS
963 Birch Bay Lynden Road
Lynden, WA 98264
(206) 354-5884

www.americanradiohistory.com

ALASKAN HF SSB cont'd

1657	
1660	
1705	
1709	
1712	
2003	
2006	
2115	
2118	
2253	
2256	Ketchikan Receive 2
2312	
1400	
2419	
2422	
2427	
2430	
2447	
2450	
2463	
2466	
2471	
2474	Kodiak Receive
2479	
2482	
2506	RTTY operation may be authorized
2509	
2512	
2535	
2538	
2563	
2566	
2601	
2604	Ketchikan Transmit 1
2616	
2629	
2632	Cordova Receive
2691	
2694	Juneau Receive 1
2773	
2776	Ketchikan Receive 2
2781	Kodiak Transmit
2784	Juneau Transmit 1
3164.5	
3167.5	Fairbanks Transmit 1
3180	Ketchikan Transmit 2
3183	
3198	
3201	
3238	Anchorage Receive 1
3241	Juneau Transmit 2
3258	
3261	
3303	
3354	Fairbanks Receive 1
3357	Juneau Receive 2
3362	Anchorage Transmit 1
3365	
4035	
4791.5	Fairbanks Transmit 2-RTTY operation may be authorized
5134.5	Anchorage Receive 2
5135.0	State of Alaska Division Emergency Serv.
5137.5	Anchorage Receive 3 (Anch. will use Xmit 1 or 2)
5164.5	
4167.5	Alaska Calling and Emergency
5204.5	
5207.5	Fairbanks Receive 2
5370	Anchorage Transmit 2
6948.5	RTTY operation may be authorized
7368.5	RTTY operation may be authorized
8067	
8070	
11437	RTTY operation may be authorized
11601.5	RTTY operation may be authorized ●

COMPUTER-AIDED DESIGN-- The Cutting Edge of Communications Engineering

by Rick Ferranti

INTRODUCTION

Nearly everyone has been exposed to the enormous influx of digital technology as it impacts the communications world--our scanners, HF receivers, teleprinters, and frequency lists are being increasingly computerized. More and more often the once-familiar receiver dial is being replaced by a digital readout, and even the tuning knob is connected to a digital chopper instead of the old continuously-variable air capacitor.

Yet, behind the scenes of the digital revolution is another, less glamorous, perhaps, but just as important phenomenon. Have you looked at the schematic diagram for your latest high-tech receiver and compared it to one for a receiver of the 1950s?

Notice the front-end portion, the part closest to the antenna, where filters and RF amplifiers and mixers and IF sections reside. These, too, have evolved along with their digital brothers, for the RF and analog performance of a modern communications receiver far outstrips its predecessors of 30 years ago.

Indeed, radiofrequency circuit complexity unheard of just a decade earlier is routinely incorporated in recent receivers, mainly because the design can be evolved, checked, and re-evaluated without even touching a soldering iron. This is due to the advent of computer-aided design (CAD), where complex circuitry can be modelled and simulated with surprising ease and speed.

TYPES OF PROGRAMS

Two main types of programs exist for the designer --programs for the analysis of an existing circuit (which could include provision for optimizing and tweaking), and programs that synthesize a circuit given the design parameters you specify.

Under the first category we have several subgroups -- programs that analyze your circuit in the "time domain" (like hooking up a 'scope to the real thing on your bench); programs for "frequency domain" analysis (like sweeping a filter for its frequency response or using a spectrum analyzer on the bench); and "systems" programs that require a mathematical treatment of your circuit idea (in block diagram form) and show you how the idea holds up under certain conditions.

On the other hand, the second broad category of synthesis will actually draw a diagram of a circuit once you say what you want it to do! We'll see an example of this rather incredible performance shortly, though the programs I'm aware of that fabricate circuits work with passive components (coils, capacitors, resistors) and not transistors.

HOW DO THEY WORK?

Except for the "systems" kind of program where the user inputs a set of equations, the rest of the analysis routines take their input as a set of connections between specified components. The computer arranges the data into an array of numbers (a "matrix," if you still remember your high-school algebra), with the part's value and its connections determining where it goes in the number square.

Power supplies and signal sources (to test the circuit) go into another special arrangement of numbers. Finally, the computer has models of active devices stored in its memory--transistors, diodes, op-amps, etc.--and puts these into the circuit number array when you specify these parts in your schematic connection diagram.

The actual calculation of circuit performance depends on what you want to know. If it's a frequency sweep of a filter or amplifier, the computer solves the matrix for the voltage or current you want (more high-school algebra), doing it over and over again at discrete frequencies until there's enough data to make a smooth plot of the response.

A time-domain plot requires the fancier technique of numerical integration, which a computer can easily perform on the matrix and then show you an oscilloscope-like picture of the result.

Alternatively, the "systems" programs just manipulate the mathematical descriptions you've provided, such as factoring equations or transforming a time-domain plot to a frequency-domain plot for harmonic analysis. These programs help you see exactly how the whole front-end of a receiver, for example, will act on a given signal.

Finally the synthesis programs take as their input the specifications of your circuit--how much gain or loss it should have at a certain frequency, etc. Then the computer fits a curve to the desired response and finds the equation for just that fit--finally coming up with circuit element values and connections that match the equation. This is a fascinating and powerful tool, bordering on "artificial intelligence" in electronic design.

SOME EXAMPLES

In figure 1 we have a circuit ready for time-domain analysis, a simple half-wave rectifier feeding a coil and shunt capacitor/resistor combination. Figure 2 shows its computer-simulated response. The

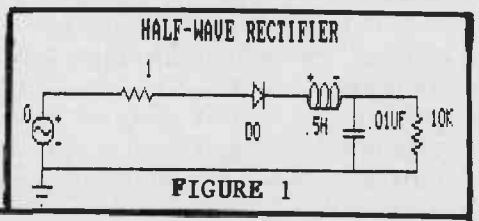


FIGURE 1

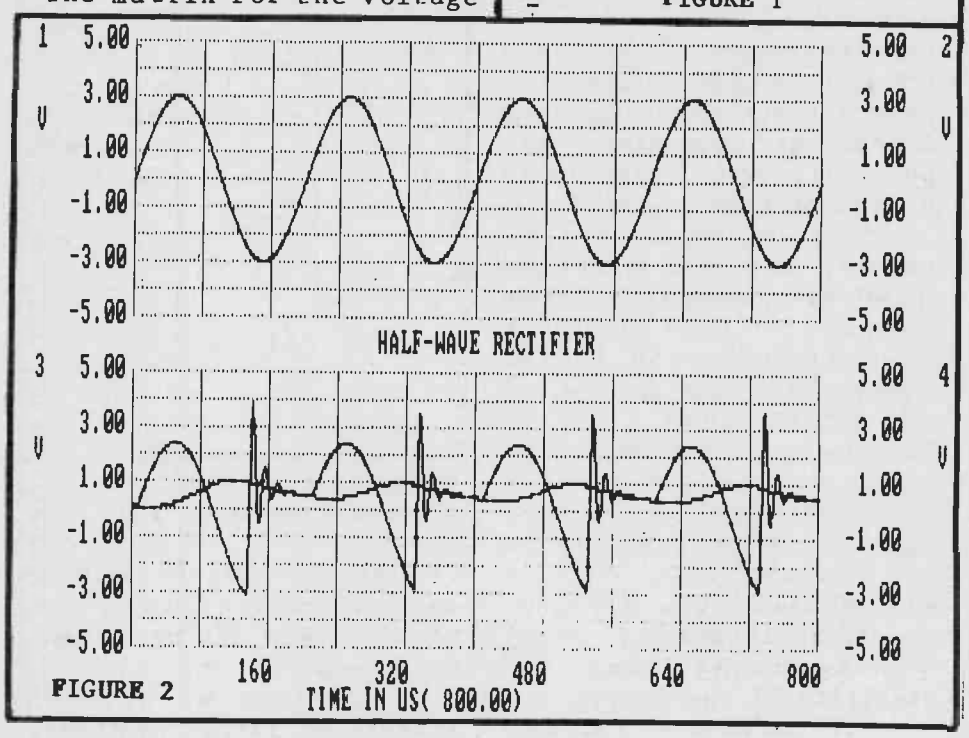


FIGURE 2

www.americanradiohistory.com

COMPUTER DESIGN cont'd

upper trace is the input sinewave and the lower traces have the voltage at the diode (the sinewave with high-frequency ringing on it), and the output voltage (the smaller sinewave ramping up to about a volt peak).

That high-frequency ringing is quite fascinating and often overlooked without the computer's unerring aid because it comes not from the coil/capacitor combination, but from the stored energy in the diode dumping into the coil just as the diode switches off! The energy storage is part of the diode model (as in a real diode) which the program has taken into account. This behavior, of course, can be confirmed in the laboratory.

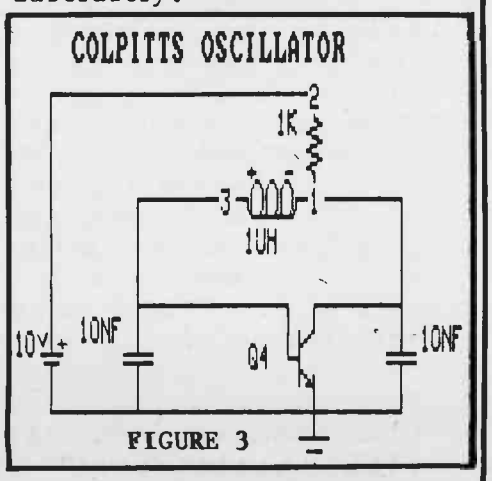


FIGURE 3

In figure 3 we see another time-domain circuit, this time a friendly Colpitts oscillator circuit fed with a 10-volt battery. The connections are shown numbered 1-2-3, and figure 4 shows you what happens at 1 and 3 when the juice is first switched on.

You're actually seeing the oscillator start to oscillate, something virtually impossible with a real circuit and 'scope. Notice the distortion in the sinewaves, particularly when it just gets going, and how things settle down after a few cycles. By changing a component value or two and re-running the simulation you can optimize the circuit for faster start-up, lower distortion, or maximum output--without touching a soldering iron.

Figure 5 shows you the results of a "systems" kind of analysis; shown here are the pole and zero locations of a rather complicated phase-locked loop frequency synthesizer (as found in almost any modern communications gear). Despite the fact that it looks like a picture from some bizarre psychological test, it tells the experienced designer important information about the response time and stability of the loop.

If you've ever factored

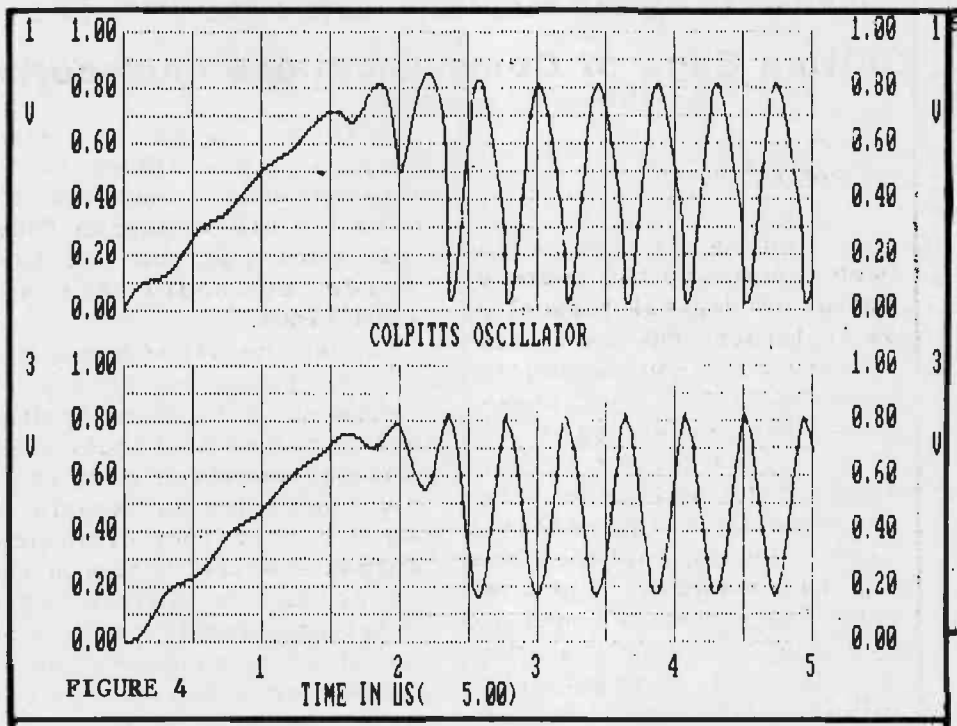


FIGURE 4

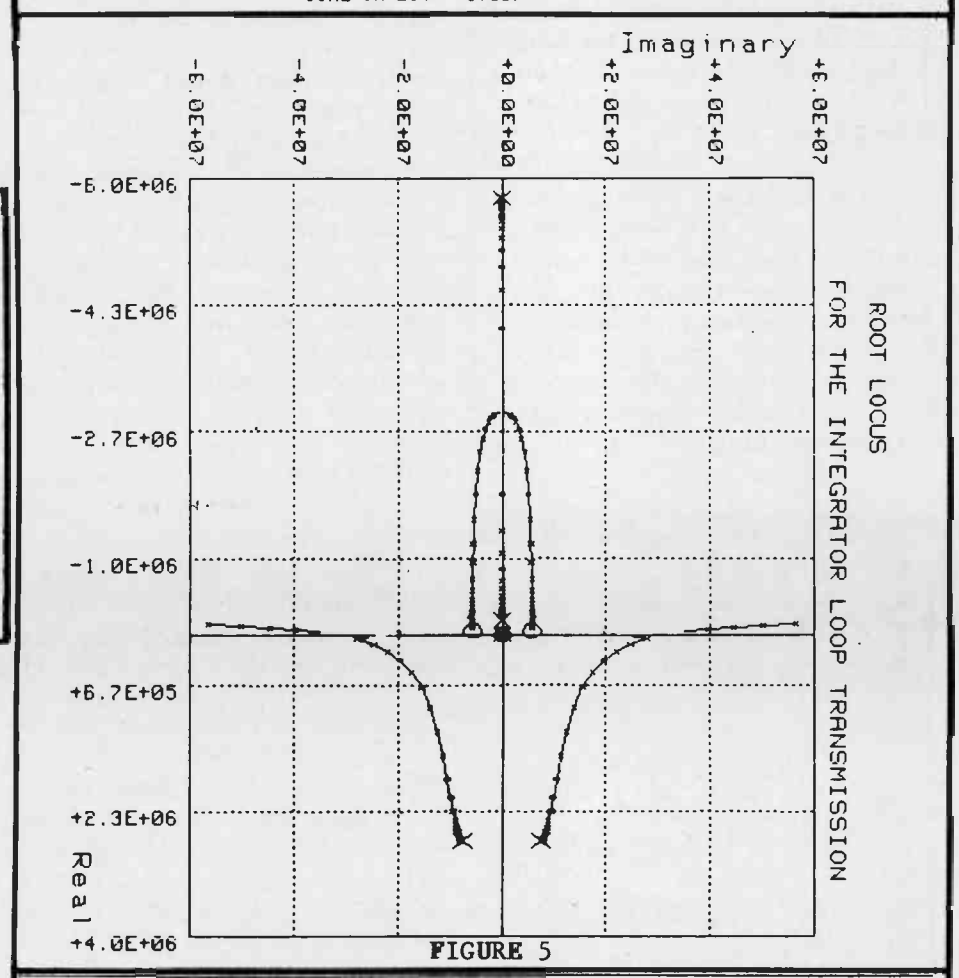


FIGURE 5

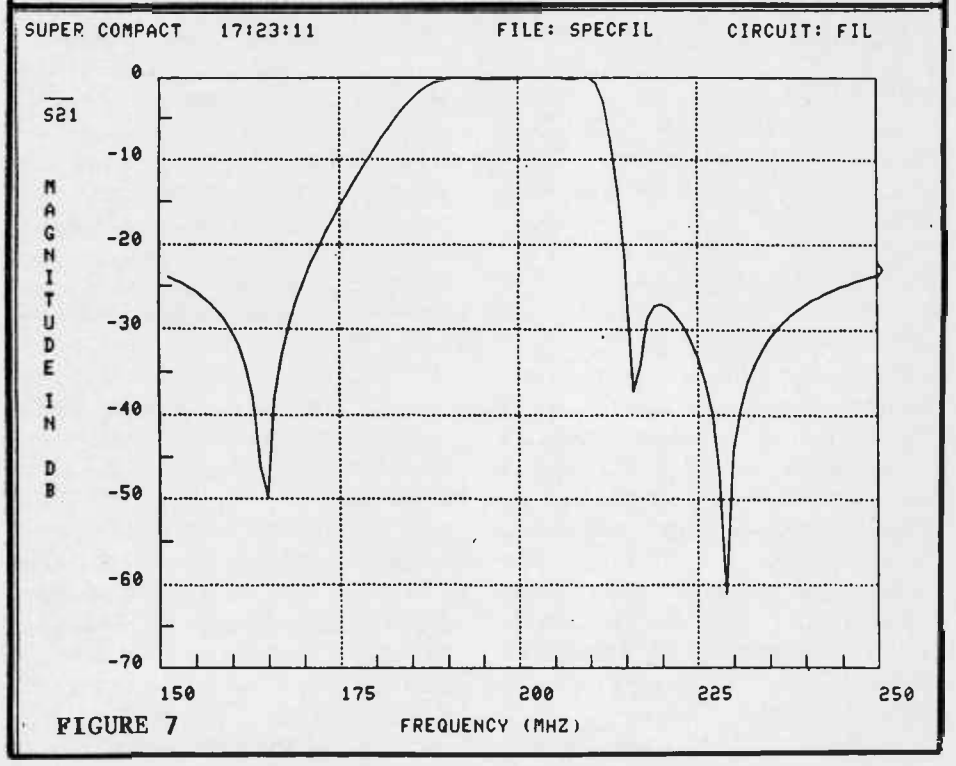


FIGURE 7

equations in high-school, you can appreciate that this represents a fifth-order complex factorization done several dozen times--in about 30 seconds by a desktop computer!

Finally, we have an example of filter synthesis (figure 6). I gave the computer a set of specifications (fast roll-off above 210 MHz, relatively slow below 190 MHz, etc.) and it typed the output you see here. The input/output impedances are 50 ohms, and the rest is a ladder of

```
SPECFIL                    FIGURE 6
 1    ....R....          5.0000000D+01
      .       .
 3    ....C....          7.3881179D-12
      .       .
      .       ....
 4    .       L   C      1.7429898D-08
      .       ....       2.7847820D-11
      .       .
 6    .       C          1.1224671D-11
      .       .
 7    ...L.C...          3.4875864D-08
      .       .          2.6818213D-11
      .       .
 9    ....C....          6.0491559D-11
      .       .
      .       ....
10    .       L   C      4.3340972D-09
      .       ....       1.2550641D-10
      .       .
12    .       C          5.6535349D-11
      .       .
13    ....C....          1.3993703D-12
      .       .
14    .       C          3.3172282D-11
      .       .
15    ....R....          5.0000000D+01
```

coils and capacitors with their values printed next to them.

To check the results I ran a frequency sweep of the circuit with the output plotted in figure 7--a rather unusual filter shape but one which matched my requirements exactly. It would have taken many days for a human designer to engineer such a complicated network (12 elements) and the result would probably have been a compromise.

However, there's one caveat: You can't blindly design circuits this way without a little practical engineering sense. That 4 nanohenry coil on line 10 is so small that stray lead inductance exceed its value. Best to try another kind of design (which the computer lets you do) and get a more reasonable set of element values before you try to build this filter in the lab!

We've seen how several different programs help the analog/RF engineer cut development time and costs by designing and experimenting with circuits on a computer rather than in hardware. So the next time you lift the lid on your Blooperdyne 5000 receiver, marvel not only at the digital hardware that gives you readouts and memories, but also on the filters and amplifiers that give you its superb performance--all built and tested on a keyboard long before its incarnation in silicon and copper.

Some further references:

The many programs available for personal/desktop/mainframe computers are listed in "The Software Selector: A Guide to RF and Microwave CAD," Microwave and RF, December 1984.

Cuthbert, T.R. Circuit Design Using Personal Computers. Wiley, 1983.

Chua, L. and Lin, P. Computer-Aided Analysis of Electronic Circuits. Prentice-Hall, 1975. ●

www.americanradiohistory.com

SWL Info Via Computer Program

MT reader and entrepreneur Ronald Pokatiloff (2661 Sheridan Rd., Zion, IL 60099) has made available an interesting two-for-one cassette program for Commodore 64 users.

The cassette contains an hourly access to approximately 20 stations for program information during prime time (2300-0700) to North America. Additional programs on the tape include 24 hour clock, frequency to wavelength conversion, antenna lengths, band assignments, abbreviations and more.

The cassette costs $15, a printout version of the programs, frequencies and abbreviations is available separately for $5.

Ron has also taken off where the late Larry Brookwell of the San Diego DX'ers left off. His new Radio Equipment Review is $2 each for the bi-monthly publication and up to six issues (one year) can be prepaid.

CELLULAR VS. TRUNKING... A Course in Brief

Considerable confusion has understandably arisen in the 800 MHz portion of the spectrum between two new modes of communications: cellular telephone and trunking. Let's take a brief look at the difference.

TRUNKING

The sharing of a small number of communication paths (trunks) by a large number of users; accomplished by providing a variety of frequency choices for different path combinations.

CELLULAR

A network of repeaters located for optimum pickup and retransmission of mobile radio signals; automatically switched as the vehicle changes locations.

Somewhat oversimplified, but that's it in a nutshell.

BROADCASTING. . .

HANK BENNETT ON SHORTWAVE

WDX - A SERVICE TO AND FOR THE SWL

Over the course of the past several months, a number of Monitoring Times readers have written to me inquiring about the WDX Monitor Registration Program, which they have seen briefly mentioned from time to time. I'd like to use the column this month, as we head into a new DX season, to explain the WDX program, how it began, and what we are achieving.

The program was originally begun by a gentleman in Ohio a number of years ago, probably in the mid-sixties. He felt, as I understand, that it would be a good idea to try to determine just how many DXers, short-wave listeners and radio enthusiasts there actually were in existence at the time.

I don't really know why he wanted to collect this information unless it was to show the ham-radio-oriented magazines that there were at least as many non-licensed radio hobbyists as there were ham radio operators. This is only a guess on my part.

He started issuing station registration certificates under the prefix "WRØ", but again, I have no idea why he chose that specific prefix.

In due time Popular Electronics assumed operation of the program in agreement with the originator and at that time the prefix was changed to "WPE" so that the last two letters would form the intiials of the magazine. With the heavy publicity given to the program by the magazine, the work load soon became far more than anyone ever anticipated and in 1970 they turned the entire program over to your editor, along with most (but not all) of the original applications. During the time that the magazine handled the program, they issued thousands upon thousands of certificates with registration identifiers.

Upon receipt of the WPE program, and in agreement with certain conditions and procedures, the prefix was again changed to "WDX", thus indicating a total discontinuance of the program by the magazine, and a new beginning with a prefix that could easily be identified with our hobby.

At no time has our program ever been a part of the federal licensing system. At the time that I took over the program, I inquired with the FCC to assure there would be no problems involved with what we were doing and with the use of our identifiers. While the FCC did not officially give their approval, they did indicate that they saw no objection to our efforts.

Aside from the original intent in the WRØ program, our intent is to give a real radio-type identification to anyone who has a real interest in any phase of the radio hobby. Many listeners are unable, for various reasons, to obtain an amateur radio license with government-issued call signs. Others simply do not have any desire for a federal license. But nearly everyone does appreciate the opportunity to have an identifier of his very own which is similar to but different from the federally-issued call signs.

When I was a young kid a half-century ago, I often dreamed of having my own personal station call sign--a real one. Until that time arrived, I had to be content to be known simply as an "SWL" or, even worse, a "BCL" (broadcast listener). Both of these identifiers were used in rather derisive manner by many ham operators. To them a BCL was a neighborhood pain who did nothing more than ring doorbells and collect QSL cards from local ham operators.

One of those hams (after I had flunked the FCC code test twice) took me in his home and, with my parent's permission, sat me in front of a code-sending machine and forced me to copy code until I could take 65 letters per minute with no errors. My thanks to W3BWI, now W2POC, for seeing to it that the code stopped somewhere in between my ears instead of going in one side and out the other!

Ringing doorbells was fine but after a while even this got to me and that day in George's basement did the trick. I passed the exam and got my operator license. Yes, ONLY the operator license. This was in 1942 during the early part of World War II when no station licenses (the part with the call sign on it) were being issued. So I still had to be content to wait until 1946 to get my very own W2PNA. But at least I was able to go through the war as a radio operator, both low- and high-speed, as well as being, for a short time, an intercept operator.

To continue to digress for a moment, during my service time in WW II, I was with a radio unit attached to an air base. Our net consisted of four stations in all and at one of them we had a long-time, hot-shot Morse operator who could copy somewhere around 50 words per minute if he had to. He knew all of the "Q" and commercial "Z" signals but we weren't allowed to use any signals except army signal corps approved "Q" signals.

Anyhow, when conditions on the air were bad and I was on duty as the operator at our station, and I knew that good buddy Clay Weissenbach was on one of the other stations, we'd get the traffic through, using army Q signals, ham radio Q signals, commercial Z signals, and we'd both have the articles of war read to us the next day by our radio lieutenant who didn't know a single letter in Morse!

So, OK. What about the SWL? Or the BCL? They had a desire for radio, too, and in some cases it was more of a real desire to simply listen than many hams had to operate. And we all know that at one time or another every licensed ham was first an SWL, even though you won't find any of them who will admit to such a thing. (I was!...Bob)!

These SWLs and BCLs needed some form of identification and it had to be done on a non-government type of program since in our government there is no official registration required to be a listener as there is in many foreign nations (You didn't know that many foreign SWLs have to be government-registered? And for a fee? It IS a fact!).

When WRØ came along, then WPE, and finally my chance to be of some service to the SWL fraternity even though I was a ham radio operator myself, I jumped at the chance to own and operate the program. I felt that here was a very real opportunity to help the SWLs and BCLs to have some very real recognition of their own.

Since 1970 I have operated WDX and we have issued many thousands of registration certificates to

☞

www.americanradiohistory.com

***HANK BENNETT** cont'd*

persons in all walks of life, including hundreds of ham operators.

Admittedly, there are many who do not care to have their own identifier and this is, of course, their privilege. But for those who do want their own identifier, we have them, and you can have your choice of WDX or KDX prefix, the number of the ham radio call area in which you live, and your choice of one or two letters following (premium class), three letters of your choice--intials, for example--(special class), or three letters in alphabetical order (general class). Drop us a line at WDX, P.O. Box 3333, Cherry Hill, NJ 08034 and we'll send you all the details and an application blank.

In connection with the WDX Monitor Registration Program, we operate the WDX DX Awards Program with its attendant WDX Honor Roll. Again, full details upon request.

There are other identifier programs in existence but WDX is the direct outgrowth of the original program. It is also the largest and is known the world over.

In the course of time, many people on the Honor Roll have moved and failed to let us know of their new location. We still maintain them on the Honor Roll but we'd like to be able to contact them with the latest Honor Roll listing. If any of our readers have addresses for any of the following, I'd surely like to hear from you.

Gregg Calkin
Robert Combs
Mark Connelly
Edward Day
Gerry Dexter
Marlin Field
Mike Finigan
Michael Fletcher
Leo Fleury
Fred Gaisser
Vincent Geraci
Art Glover
Robert Harrison
Russell Hawkins
Brian Heller
W. P. Kilroy
Gerry Klinck
Orv Lyttle
Richard Markell
Hiroatsu Matsuura
Paul Mayo
Joseph McDaniel
James Pogue
F. H. Pollard
Marvin Robbins
David Siddall
Everett Slosman
Robert Wallace
Billy Wambach
Francis Wheeler ●

SWL WORLD WATCH

by Ken Wood

Despite the highly changeable propagation conditions experienced over the past month there has been some home-grown excitement in the air for listeners to the short-wave broadcasting bands.

Radio Martí, the U.S. government's long-awaited special service to Cuba went on the air on 19 May and to the surprise of most listeners showed up on short wave in addition to its 1180 medium wave outlet at Marathon, Florida. The short-wave broadcasts come direct from the VOA's Greenville transmitter complex and are currently aired 0930-1200 on 6075, 1200-1400 on 9570, 1400-1730 on 11815, 2030-2300 on 11930 and 2300-0330 on 9660. No QSL info on Radio Martí so far.

They Assemblies of Yahweh station, WMLF, has started testing and is being heard around 1700 on 15100, although through rather heavy QRM and not at good strength. The program consists of sermons, interrupted every few minutes for station IDs and requests for reception reports. Those reports go to WMLF at P.O. Drawer C, Bethel, PA 19507. The schedule is supposed to be 1700-1900 on 15110 and 0400-0600 on 15150.

Otherwise the summer doldrums have set in. Jeeves and I have, however, managed to collect a few things for you "off the Frog" so here it is:

AFRICA

CAMEROON - Radio Cameroon, Yaounde, noted with good strength on 4850 at 0500 with local music. News in English (which is picked up by several other Cameroon outlets as well).

EGYPT - Cairo Radio's "Voice of the Arabs" all Arabic service heard at 0300 on 7150 at good strength.

KENYA - The Voice of Kenya heard in English at 0300 on 4915 but it seldom equals the strength of most of the West Africans.

LIBERIA - Religious outlet ELWA heard with English religious programming on 4760 at 0705, fair level.

LIBYA - LAJBC in Arabic with a sign-on at 0500 on 6195 and continuing in Arabic with mostly music and talk.

NAMIBIA - Radio Southwest Africa on 3295 at 0145 with pop music, easy listening selections, English IDs and talk.

SIERRA LEONE - SLBS in Freetown on 5980 in vernaculars at 0630, into English news at 0700.

SOMALIA - Radio Mogadishu on 7200 in Somali from 0300 sign-on with anthem and prayers.

SUDAN - Omdurman Radio now heard in local U.S. daytimes on 11180, a channel formerly used by the clandestine Voice of Free Sons of Yemini South.

TUNISIA - Tunis Radio's all Arabic program noted from 0630 sign-on with a good signal on 7225.

ASIA AND OCEANA

NORTH KOREA - Radio Pyongyang heard on 9977 from 1100 in English with an organ interval signal at sign-on. Poor to fair level.

SOLOMON ISLANDS - Solomon Islands Broadcasting Corp. on 5020, parallel to 9545, at 1000 with Radio Australia news relay.

SOUTH KOREA - Sweden Calling DX'ers reports a new South Korean time station on the air. HLA, operated by the Korean Standard Research Institution at Tay Doc is scheduled on weekdays from 0100 to 0800 on 5000. Fat chance on that frequency!

SYRIA - Syrian Radio heard on 17840 in their 1200 hour-long English segment. Also noted in Arabic at 2000 on 12085.

TAHITI - Radio Tahiti, 6135 good with island music at 0600.

UNITED ARAB EMIRATES - Voice of the UAE from Abu Dhabi heard in Arabic to 2130 on 9695 and UAE Radio, Dubai, noted in Arabic to 0330 on 7310 with English starting at 0330.

UZBEK, USSR - Radio Tashkent heard on 11785 with English from 1200 but signals only at fair strength.

VIETNAM - English from the Voice of Vietnam noted at 1000 on 9840, in parallel with 12020 and about equal in readability.

EUROPE

DENMARK - Radio Denmark, usually Danish except for English opening announcement at 1300 on 15165.

HUNGARY - Radio Budapest, English to Europe heard at 2000 on 11910.

MALTA - Radio Mediterranean scheduled from 1800 to 1857 in Arabic, 2130-2230 in French, 2230-2330 in English all on 6110.

NORWAY - Radio Norway, English at 2000 (Sunday) with the "Norway Today" program.

YUGOSLAVIA - Radio Yugoslavia with English news and features at 2115 to 2130.

NORTH AND CENTRAL AMERICA

COSTA RICA - Radio Casino, Puerto Limon, on 5955 at 0550 to 0600 sign-off in Spanish.

CUBA - The Mayak relay continues going strong on 4765, all Russian.

Radio Rebelde medium wave relay still heard on 5025 during local hours of darkness. Latin music, IDs, time checks, news, all in Spanish.

HONDURAS - Radio Luz y Vida, 3251 at 0238 with both Spanish and English music and religious programming.

MEXICO - La Hora Exacta reactivated on 9555 after an absence. Time announcements, commercials. Noted in mornings and early evenings.

La Voz de la America Latina, still heard daytimes on 15160 (sometimes up to 10 kilohertz higher), all Spanish relays of XEW medium wave, Mexico City.

SOUTH AMERICA

ANTARCTICA - Radio Nacional Archangel San Gabriel, Argentine Antarctica, heard to sign-off at 0032 on 15474.

BOLIVIA - Radio San Jose, 5985 with Bolivian music, Spanish IDs at 1040.

4797 Radio Nueva America at 1000 sign-on with ID by woman over piano music. Usually more reliable reception at this hour than in the evening.

Radio Illimani, 6025 at 0930 in parallel with 4945, the former frequency with the better signal.

BRAZIL - Radio Nacional Tabatinga, 4815, at 1015 in Portuguese. Good level with the Colombian not in evidence.

Radio Inconfidencia again showing on 19 meters. Heard around 2300 on 15190 with ID in Portuguese.

Radio Aparecida now using 11855 around 0030 in Portuguese with all religious programming.

Radio MEC now on 11950 from 2130 tune in all Portuguese. This station, operated by the Ministry of Education and Culture, is expanding hours and frequencies.

Radio Poti, 4965 with Brazilian popular music, IDs in Portuguese at 0230, to sign-off around 0300.

COLOMBIA - Radio

www.americanradiohistory.com

SWL WORLD WATCH cont'd

Macarena, 5975 at 1003 in Spanish with music, ID, commercials.

ECUADOR - La Voz de Upano, 5039 heard in Spanish at 0200.

La Voz de Napo, 3280 in Spanish at 1032 with ID and Ecuadorian music.

Radio Iris, 3380 at 0325 in Spanish with Latin pops, time checks, IDs.

Radio Catolica Nacional, 5055, good strength at 0145 with religious programming in Spanish.

FALKLAND ISLANDS - FIBS is still being noted frequently - at 0900 sign-on and again in the late evenings on 3958.

SURINAM - Radio Apinte on 5006 heard here around 0230 with a mostly music program.

VENEZUELA - La Voz de Carabobo, 4780 good as usual to its normal 0400 sign-off, all Spanish.

Radio Nacional, 5020 with news in Spanish at 0100 at good level.

Radio Tachira, 4830 at 0130 with ID and Latin ballads. Good but some spill from Radio Reloj, Costa Rica, 4832.

CHALLENGER

Adventist World Radio's newest station, a 3 kilowatter in Forli, Italy, is now on the air and has already been heard by a few listeners in the United States. The station seems to be continually adjusting schedules. Latest one Jeeves and I have seen has English from 0600-0700 on 7125 and 2200-2300 on 6205. French at 0700-0730 on 7125. German at 0730-0830 on 7125 and 1600-1700 on 6205. Power may be increased to 10 kilowatts before too long. Reception reports should be sent to AWR at P.O. Box 2590, 1114 Lisbon, Portugal.

JEEVES SAYS:

Ken and I are still keeping an ear on that unidentified all music station on 7400 which continues daily at 0000 to 0200, but still not hearing any announcements--only the music tapes. If these were tests of a broadcast outlet surely they would have been completed by now?

Otherwise, like so many SWBC listeners, the receiver is getting less use during the summer months. If you are listening, let us know what you're hearing. If you're looking for things to tune, don't forget to check the 7 megahertz area for pirate broadcasters. For that matter, explore the whole area as more and more regular broadcasters are calling this area home. Another good bet is 19 meters, now staying open later into the evening so you never know what may turn up here.

We'll be prowling 'round the bands too and, as usual, will report our results next month. You're welcome to join us and until then,

73 from Ken and me. ●

ENGLISH LANGUAGE BROADCASTS

by Tom Williamson

Greetings to all our readers! I would like to invite you to submit comments on this column through the office of Monitoring Times. Let me know YOUR experience with reception of your favorite stations and programs, especially what frequencies are most reliable in your area!

I welcome material from Dave Alpert of N.Y., forwarded by MT and used for this article. All comments are welcome, provided they are oriented to regular "listenable" stations; this is not a DX column for rare reception.

This month, to provide variety, I shall dispense with the regular format in favor of a suggested schedule for one "listening day" to show how you might pass a 24 hour period--with some breaks for refreshment!--at the dial of your short-wave receiver.

One of the results will be your "education" in regard to world events and cultures. In this continent, despite our technological blessings, we remain poorly informed about many things because of the unconscious rationing of news, or perhaps "selection" by the media staff who always think they know what interests people. I'm sure they do to some extent. The subjects left uncovered become "unpopular" because they are unknown to us.

By comparison with the average person, I've always found the SW broadcast listener to be much better "educated"! Let me know what you think of this format. All times are U.T.C. Let's go!

1100-1400

AUSTRALIA - You can start your listening session on 9580 kHz with the mighty voice of the A.B.C. overseas service. Radio Australia will bring you up to date on what's happening in Asia and the Pacific region, not to ignore the land of the kangaroo itself! News bulletins are on the hour, Australian news at 1230.

"Four Corners" is an excellent commentary at 1210 weekdays, with "Australian Editorial Opinion" on Saturday, "Business World" on Sunday, and "Australian Insight" weekdays...all at 1310. "Sports Scoreboard" is at 1150 weekdays, 1130 on Saturday and Sunday. This station will give you a different perspective on world news.

BBC WORLD SERVICE from London will give you balanced news reporting on the hour, also "Radio Newsreel," "Sports Roundup," and "Twenty-Four Hours"--a news analysis program. "Network UK" also falls in this time slot if you are interested in more detailed home news. More material on Britain is to be found in "News About Britain" at 1109.

HCJB QUITO ECUADOR is usually well heard in the mornings with the time segment known as "Morning in the Mountains." Much of this transmission time is devoted to religious matters since they are a Christian station. "Pause for Good News" also has this orientation, but is informative and cheerful (We all can use some good news these days!). On Saturdays there is a program for philatelists (OK--"stamp collectors"!) called "Hobby of Kings" which is interesting.

MISCELLANEOUS - There are many other stations on the air in English at this time, but enjoyment will depend upon propagation conditions. Try for the Europeans like Radio Finland 15400 kHz, Belgium 15590, Austria 15320, Switzerland 15345 (starts at 1400), and Norway 15305 (Sundays). You might also be lucky with Beijing on 9/11 MHz bands, or South Korea 15575/9750 from 1400.

1600-1700

The "lunch-hour" listener! Often one of the best times to pick up the **BBC WORLD SERVICE** on 11775/15260 kHz with news, commentary and the "World Today" -- coming to us from the Sackville relay transmitter.

RADIO FRANCE INTERNATIONAL is also on the air at this hour using 17795, 17620 and 11705--This is the "Paris Calling Africa" program. However, you may find reception better later in the day now that they are using the Cayenne, French Guyana, relay transmitter.

2100-2300

Now is the time for Eastern stations, although very dependent upon conditions in the ionosphere. Try for the following:

TURKEY On 9560 the Ankara station "Voice of Turkey" is often a powerhouse signal. They start at 2300 with news, "Letter from Turkey" (politics), "From Anatolia" (arts), "Step by Step Turkey" (tourism), and "Turkish Panorama" (geography and culture). These programs are very different from usual run-of-the-mill stuff and will give you an insight into things you've never heard of!

At 2130 **CAIRO** starts 1-1/2 hours of English on 9805 kHz which may offer a good signal, although I find the later program on 9475 more reliable (0200). As Cairo starts up so does the **LIBYAN** station on 11815 (if you can get good quality from them). For sure this one is different! You may find it intriguing--or infuriating--to hear the views of the Khadaffi regime!!

Two others of interest are **DAMASCUS** on 12085 (starts at 2000, however!) heard by Alpert closing English at 2104!...and Greece (not quite "Eastern" but borderline) 7395/9860, but erratic signals.

2200-0500

The evening is here. So much going on now we have to be selective. **ISRAEL** is on the air with news on the hour, followed by varied programs including quite a lot of music--much of it "pop" from the nation itself, not as attractive to my ear as the folk music which you may also hear. 00/01/04 hours are the beginning times for Kol Israel.

A little before 0200 you may hear the well-known Bokmakierie bird interval signal which heralds **RADIO SOUTH AFRICA** on the air to North America. After the news there is "Africa Today" Saturday which includes economic news; Sunday is for "P.O. Box 4559," the letters from listeners program; Monday gives us "Under the Southern Cross" with "Our Wildlife Heritage." Once again the viewpoint on political matters is interesting.

SWISS RADIO INTERNATIONAL is on at 0200/0400 with news and "Dateline" during the week; "Swiss Shortwave Merry-go-round," "Grapevine," "In Person," and "Sunday Supplement" are weekend programs.

www.americanradiohistory.com

ENGLISH LANGUAGE cont'd

VOICE OF AMERICA can be heard at many different hours, but during this evening segment they have two programs, one to the Americas on 5995/9650/11580/15205/15375 kHz, and one to the Caribbean on 6130/9455. Apart from extensive news, one may hear such diverse programs as "Music USA Jazz," "Concert Hall," "Report to the America," and "Press Conference USA."

RADIO NEDERLAND has extensive broadcasts to N. America with "Monday/Wednesday/Friday Report," "Talking to" (Tuesday), "Media Network" Thursday, and "Shortwave Feedback" Saturday. For this latter one you can phone Holland 35-18700 and record a question to be answered! Of course Sundays has the famous "Happy Station" program.

At this point let us note that if you didn't hear Australia, they are again on the air 2100-0100 and 0200-0500 in the 17 MHz band. HCJB has the "Passport" program at 0030-0600. At 0100 there is a special bulletin of Latin American news which will give you insight you won't get elsewhere.

It would be difficult to give an acurate idea of the best time to hear the USSR-Radio Moscow (World) Service; they are abundant on the dial to east coast 2200-0300 and to the west 0300-0700. Apart from news and political commentaries, regular programs include "Sidelights on Soviet Life." These programs are from the North American service but the World Service can be heard over a longer period.

Arts, science, sports, and music all have their special time slots, but political items are the major part of programming. In addition to Moscow you may be able to hear broadcasts from RADIO KIEV or RADIO VILNIUS.

CUBA: RADIO HAVANA presents the Castro viewpoint to N. America 0100-0600 in the 6 MHz band; Alpert noted 6100 at 0500 in addition to other channels and 9525 starting at 0700 (which is outside my "evening" but OK for Western ers!). The programs include a goodly amount of Latin American music.

RADIO CANADA INTERNATIONAL presents a Northern viewpoint at 2300/0000/0200/0300 in half hour segments--mainly news, commentary and sports programs. You will get a different view here on some topics you might expect to be of mutual outlook with the U.S.A.

WEST GERMANY-DEUTSCHE WELLE has fine signals to this continent at 0100 and 0500 each a one-hour program. Apart from news and commentaries they have a wide variety of interesting programs on the arts and music.

SPAIN-REE has two solid channels these days; 11880/9630 kHz at 0000-0200 and 0500-0600, the latter with 6125 replacing 11 MHz. While their program arrangement seems a bit casual, they have some really excellent music, both folk and Spanish "pop"--the latter being excellent.

VATICAN RADIO has a brief 0045-0115 program with excellent signals on 6015 and 9605 (11 MHz advertised also). Special news of Catholic/Vatican activities will not be heard elsewhere.

ARGENTINA may be heard over RAE on 9690 at 0100 or 0400 but reception is temperamental, sometimes very good.

Much more reliable, now they have returned to 11745 kHz is Radio Nacional Brasilia--a good signal and, as I have mentioned before, some fine programs. This indeed is a "different" station and you can learn an awful lot about Brazil, it's history, culture, and music without the obsessive propaganda so many stations provide. I find them like a breath of fresh air on the dial!

CHINA-May be heard when conditions are good in the 9/11/15 MHz bands (see last month special section on Radio Beijing). TAIWAN can be heard very well by it's relay in Florida; the announcers take a little getting used to! If you like Chinese music these two stations should keep you happy!

There are many more stations we could have discussed, but some selectivity is essential. Don't be surprised if in your area a particular station is better heard at some other time than I have listed. Let me know! Good listening until next time! ●

WHO'S ON FIRST?

by Patrick O'Connor III
Plain Road
Hindsdale, NH 03451

PART IV

SW UTILITY

Anyone who has tuned across the short-wave spectrum (1800-30000 kHz) has heard the odd signals--Morse code, beeps, buzzes, and roars. These and others are all part of the utility scene.

By definition, a utility transmission is a radio signal that is neither a broadcast program nor an amateur transmission.

Although generally found outside the established short-wave broadcast and amateur bands, utility transmissions can--and do--pop up anywhere in the radio spectrum.

These are some of the transmission modes you might run across while listening to utility stations:

SINGLE SIDEBAND (SSB):
The usual method of voice transmission. SSB is not understandable unless a beat-frequency oscillator (BFO) is used to reinsert the "missing" part of the signal. Most HF (high frequency) SSB transmissions are in the upper sideband (USB) mode.

MORSE CODE (CW):
The oldest method of transmission, CW is still in wide use today. CW had the major advantage of getting signals through despite static and interference, and at a lower level of power than voice transmission would use.

FACSIMILE (FAX):
Sounding like a cross between propeller-driven aircraft and a speech by the robot R2-D2, FAX is used to transmit pictures, weather maps and other visual data. A special printer is needed to receive the pictures.

RADIOTELETYPE (RTTY):
Often used in ship-to-shore communications, RTTY sounds like high-speed multi-tone CW. There are demodulators available allowing the SWL to receive RTTY on a home computer.

● Why would anyone want to listen to utility transmissions? Variety! There are literally thousands upon thousands of different stations out there. You can hear mobile stations (ships, aircraft, etc.); and there are fixed stations worldwide, many in unusual locations. Because of the great number of signals, something may be heard any time of the day or night.

Of course, there are disadvantages; if you cannot understand ("read") CW, many signals will be useless to you. There are devices available to allow you to use a home computer to decipher CW & RTTY, but these units are not inexpensive and should not be bought without some thought.

Also, compared to broadcast stations, utility stations use relatively low power and are weaker when received.

To DX utility stations, a good general-coverage short-wave receiver with a BFO is a "must." For an antenna, a wire dipole is preferred as most utility listeners roam all over the short-wave bands. An antenna tuner or preselector might be a good investment. And, of course, you shouldn't forget the ground connection.

Since "ute" transmissions are constantly available, it is just a matter of where to tune. One trick is to check out the nearest short-wave broadcast band near where you want to DX; the foreign signals will give you an idea of where utility transmissions may be heard from.

Generally speaking, the higher frequencies (those above 8 MHz) are better heard during the daylight hours, while the frequencies below 12 MHz are better during the dark hours.

The lower frequencies tend to be better in the winter months, with the higher frequencies better in the summer. With the present low sunspot count, the highest frequencies (above 22 MHz) are almost abandoned, while the lower frequencies are crowded. This situation will be reversed when the sunspot count starts to rise in about 2-3 years.

● Here is a quick look at the possibilities of verification by type of transmission:

TIME SIGNAL STATIONS: Broadcasting extremely accurate time signals on very precise frequencies, these stations are generally excellent verifiers. Outside of the U.S. and Canada be sure to include reply postage.

SHORE STATIONS: Most CW & SSB stations will verify correct reports. Be sure to enclose a prepared form card (PFC) and reply postage with your report.

SHIPS/AIRCRAFT: If you can find the proper mailing address, you stand about a 50% chance of verifying ship or aircraft stations. Many will include a photo of the vessel with the QSL. Be sure to include a PFC and reply postage with your report.

FIXED: Stations used for ☞

www.americanradiohistory.com

WHO'S ON FIRST? cont'd

point-to-point transmissions are being replaced by satellite relays. Many will verify correct reports, but again, a PFC and reply postage are required.

AERONAUTICAL: Ground-base air traffic control and VOLMET (aviation weather) stations are usually good verifiers for a PFC and reply postage.

MILITARY: This is a tricky area. Some stations will verify, some won't. Some reply with "We cannot release information on this transmission" cards; some reply with all three at one time or another! QSL policies may change from day to day, and from transmission to transmission. The best bet is to keep trying--eventually you will build up a collection of different military verifications.

It should be noted that reply postage is recommended for all utility stations. There are some stations that don't require postage, but these will return your postage to be used again. It is just good manners to include the postage; it reflects well on all DX'ers.

Mint stamps are preferable to International Reply Coupons (IRC's), especially in remote areas, and should increase your chances of getting a QSL. Information on foreign mint stamps may be acquired for a self-addressed envelope to the DX Stamp Service, 7661 Roder Parkway, Ontario, NY 14519.

When you report to a utility station, NEVER divulge the contents of a specific message! This is not only a violation of the rules of the International Telecommunications Union (ITU), but is also a violation of U.S. Law as well (Section 605 of the Communications Act of 1934). Several foreign nations are even stricter; they forbid listeners to even tune in to utility signals!

You may report the call signs of the stations in communication, or the "marker" signal of the station. A marker signal is transmitted to allow other stations to tune to the proper frequency. A typical Morse code marker signal might read, "VVV DE IQX IQX IQX K 8 12 16." An experienced listener would translate this to mean, "This is station IQX (Trieste, Italy); answer on 8, 12 or 16 MHz."

Addresses are a problem. Those of time-signal stations may be found in the "WORLD RADIO-TV HANDBOOK"; outside of this, addresses are rather difficult to come by. Some are published in club bulletins and other SW periodicals. The only other comprehensive source are the publications of the ITU, but these publications are expensive and often incomplete and/or inaccurate. For those interested in checking out the pricing and availability of ITU publications, the address is Sale Section, ITU, Place des Nations, CH-1211 Geneva 20, SWITZERLAND.

There are several good books available listing utility spectrum uses and stations. The best-known is "THE CONFIDENTIAL FREQUENCY LIST" by the late Perry Ferrel. Also of very good quality are "SHORTWAVE DIRECTORY" by Bob Grove, and "GUIDE TO UTILITY STATIONS" by Joerg Klingenfuss. Anyone interested in utility DX'ing should have at least one, and preferably all three, of these fine books.

Two major radio clubs have rather extensive ute coverage. SPEEDX (7738 E. Hampston, Tucson, AZ 85715) is well-known for its extensive ute coverage. Loggings are divided by country and sub-divided by frequency. The Association of DX Reporters (ADXR--7008 Plymouth Rd., Baltimore, MD 21208) also has a good utility column, with loggings divided by type and sub-divided by mode and frequency. A ute DX'er should seriously consider membership in one or both of these fine clubs.

Membership information and a sample bulletin can be obtained for $1.50 from SPEEDX, and $1.00 from ADXR. Both clubs have also published books on ute information; ask for particulars with your membership information request.

Utility DX'ing can be fun and challenging. One thing is for sure--you won't run out of stations to listen to! ●

PIRATE RADIO

by
John Santosuosso
P.O. Box 1116
Highland City, FL 33846

THE MYSTERY STATION: In response to our article in the July issue of Monitoring Times we received an interesting letter from the anti-Castro organization Pro Libertad de Cuba, which has offices in several American cities. The letter clarifies several matters we discussed in regard to the mystery station broadcasting music, but nothing else, on 7400 and 9920 kilohertz.

As we mentioned, the station identifies itself by broadcasting on the hour a Spanish song by Nat King Cole. However, Pro Libertad de Cuba points out we gave an incorrect form of the title. In fact they furnished us with the lyrics for this key part of the song, and they are as follows:

Mas te quisiera,
Mas te amo yo,
Y todas las noches las
paso,
Suspirando por tu amor.

Since they did not supply us with a translation, readers will have to rely on my limited Spanish for this. However, the lyrics can be roughly translated:

I should love you more,
I do love you more,
And I spend every night
Longing for your love.

The letter goes on to give some possible insight into the intended purpose of this unusual operation. It declares: "Consider this: The 7400 kHz is being kept busy and with a schedule, so it is free and ready to use when it happens in Nicaragua and possibly Cuba. The musical programming may not mean much to Stateside listeners, but so what?"

Our sincere thanks to the people at Pro Libertad de Cuba, and we hope to hear from you again sometime. Muchas gracias para su ayuda.

RADIO DEAD MAN: The mail also brought a copy of the QSL issued by pirate Radio Dead Man. This station claims to be operating with a power of 65 to 100 watts from one of our Midwestern states. They play underground new wave music, and you might come across them in the 41 meter band sometime after 0500 GMT.

Thanks for the QSL, Radio Dead Man, and keep us up to date on your station's activities. Loggings of this station from readers would also be welcomed, as I have not yet seen any elsewhere. Nor do I have an address for reports, so you will have to listen for directions on where to send them.

PROGRAMMING PERSPECTIVE BY JOHN T. ARTHUR: "From somewhere off the North American coast, this is anti-humdrum radio..." No doubt about it, Radio Clandestine has popped up again. "What we lack in polish we make up for in ingenuity," says host RF Burns, and in a career covering more than ten years Burns, engineer Boris Fignutzsky, and Drool, the cabin boy, have probably entertained more listeners than any other North American shortwave station.

The staff of Radio Clandestine perfected the "hit and run" technique of pirate broadcasting, never using the same location or frequency very often. RC has been heard on frequencies ranging from 4 to 17 MHz and can sometimes be found in the popular 41 meter band.

Radio Clandestine features smooth, professional delivery of off-the-wall records and patter, along with ads for Canned Leftovers, Industrial Strength Baby Cleaner, and Kirshner's School of Dead Rock Stars.

If you hear "the awesome power" and can stop laughing long enough to take notes, the staff would love to hear from you, and RF promises to send a letterhead QSL. Send your report and three mint first-class stamps to Radio Clandestine, P.O. Box 982, Battle Creek, MI 49016, and be patient. The "ship that flys no flag" only hits port a few times per year.

As Boris says, "We'll see you here or there, we're always somewhere; we're Radio Clandestine."

MT AND THE FCC: Monitoring Times' recently announced policy of close cooperation with the FCC, as would be expected, brought some strong reactions from readers of this column. Indiana's Dan Toglin remarks, "It seems that MT does not want to stay neutral in this (ed. note: the matter of pirate radio). I really don't believe I can support MT." From North Carolina R.D. Carter writes, "My view is that broadcast and ham band pirates are none of Grove's or my business. MT readers should consider them simply another category of station to monitor and nothing more."

Tangerine Radio's Raunchy Rick provided us

☞

www.americanradiohistory.com

PIRATE RADIO cont'd

with a copy of the summer edition of the station's publication, The Wave. In a front-page editorial protesting the new MT policy he states: "The serious interference on shortwave is not caused by a few bootleggers and pirates; it's caused by 'legitimate' services such as super-power baloney broadcasters, OTH radar, men from MARS, jammers, and so forth."

We also heard from Hawaii's Chuck Boehnke and Connecticut's Gregg Bares, who express concern about the proposal. In addition to the above letters, we got several comments from other readers, but these are best left unprinted!

I will not take up much space explaining my position on this. Those who have read this column any length of time should already have a clear idea of where I have and will continue to stand (see August editorial section). I would urge everyone, regardless of your views, to let Bob know what your feelings are.

Before leaving this subject, I might note that in addition to his above remarks, R.D. Carter also wrote at length about his concern that registration of short-wave receivers and scanners with a radio club or other organization could at some future date provide authorities with information which might be used in efforts to confiscate such equipment. While I think this is not likely, I must admit stranger things have happened. After returning from England a few years ago, I was shocked to learn that I had broken English law just by listening to offshore pirate Radio Caroline.

What do MT readers think about the matter of registration of receivers? Send me your opinions on the matter, and they will be aired in this column.

UNDERGROUND 90: It was Alan Latval from British Columbia who first informed us about the closing of Underground 90 in the community of Burnaby last December. Now he has sent us a report from the Vancouver Sun that the operator has been fined a total of $1000 by a Provincial Court Judge. Fines appear to be getting larger in both Canada and the United States. Not too many years ago an American pirate might get off for as little as $250 for a first offense.

RADIO CAROLINE: It seems that this famous commercial pirate off England's southeast coast is getting a good deal of attention from the Canadian press lately. Both Alan Latval and Andrew Farmer, also of British Columbia, have sent articles pertaining to the station which appeared in the Vancouver Sun.

Perhaps one of the reasons for the interest is that a group of Vancouver investors now owns the station, and area businessmen are advertising on it. The man behind much of this is Nelson Skalbania, who made a fortune buying and selling hotels, but who recently has seen some difficult times. It is Skalbania who has persuaded the officials of Expo 86, a world's fair to be held in Vancouver next year, to become one of Canada's first advertisers on Radio Caroline. It is illegal for British and most European firms to advertise on the pirate, but not for Canadian and American organizations. Another British Columbia company known as Bet Canada has been selling lottery tickets on Radio Caroline, something that makes the provincial lottery officials unhappy.

Although extremely difficult to do, Radio Caroline has been logged on the east coast of North America. If you want to try, the frequency is 963 kilohertz. Unfortunately the station normally does not respond to reception reports.

HOLLAND: From John Demmitt in Pennsylvania comes an interesting report of a station closing in the fall of 1984. When Dutch authorities attempted to shut down FM pirate Radio Unique they were first hindered by the presence of a large snake and then by a fake dynamite bomb, which resulted in a neighborhood evacuation. Supporters of the station also threw nails onto the surrounding streets to hinder the authorities. Apparently the Dutch take their free radio seriously.

John has also received word that a number of the unlicensed medium wave stations in the Irish Republic are easily heard in Belfast in Northern Ireland. Among those audible there are Sunshine Radio, Radio West, Downtown Radio, and Radio Boyneside.

RADIO DUBLIN: Speaking of Ireland, the one Euro-pirate you are likely to hear these days is the old classic Radio Dublin. Even with low sunspot activity and warm weather it often puts in a good signal, and its extensive schedule also helps. Virginia's Jim Buscher heard Radio Dublin on 6910 kilohertz from 0344 to 0501 on May 25. In Pennsylvania Nels Hobdell logged it on June 3 from 0400 to 0500 and had it again the following night. This one has been heard as far away as the west coast, and it is a good verifier. Reports can be sent to 58 Inchicore Road, Dublin 8, Ireland.

With a good deal of determination and unusually good conditions you might also be able to pick up one of Italy's unlicensed (but presently legal) broadcasters. Florida's Terry Krueger had June reception of the Adventist World Radio Outlet at Forli, Italy, on 7125 at 0600 and on 6205 at 2200, but reception was poor.

THE MAIL BAG: Dan Troglin from Indiana had a tremendous amount of success logging pirates during the month of June. Below the 41 meter band he found one he tentatively identified as KBBR playing everything from Lead Zeppelin to banjo music. He also had some unidentified stations in the same area.

As usual, it was the 41 meter band which produced the most activity. Dan reports hearing KROK, WKUE, KNBS, Radio Nova, Zeppelin Radio Worldwide, Radio Clandestine, Voice of Venus, Radio Woodland, Secret Mountain Laboratory, and several unidentified stations.

He enjoyed a variety of programming with Radio Woodland carrying a program about farmers and claiming to be broadcasting from a cave in the far north. This "back to nature" station featured music by New Riders of the Purple Sage and Jethro Tull.

Dan also reports a nice variety of music from Zeppelin Radio Worldwide including Freeze Fram and Center Fold. He especially enjoyed KROK's production which included comedy skits and music by chicago. Dan's loggings reveal there is a considerable amount of variety among the pirates. Give them a listen, and you may be surprised by what you hear.

Florida's Dave Crawford had a new 41 meter band pirate in June. It is KBFA, Broadcasters of Free America. The station claims a power of 200 watts, so they may be capable of putting out a nice, solid signal. Dave also logged WYMN with its all female staff.

From his new listening post in Hawaii Chuck Boehnke tuned in on what was an apparent "pirate fest," during June, but he regrets to report that the two stations he managed to hear were too weak to identify.

In early July this writer received both WMTV and Zeppelin Radio Worldwide. The Zeppelin production was a bit unusual for a pirate, since the entire show featured German brass band music, and the station signed off with "Deutschland Uber Alles." WMTV played what we might call nostalgia music, hits from ten and fifteen years ago. So, you can see from all of this that the summer months, like any season of the year, can provide some fascinating listening for pirate fans. Let us know what you are hearing. ●

"Los Numeros"

32444 69213 88816 52196 63811 94216

Havana Moon

Copyright 1985. All rights reserved. No part of this article may be reproduced in any form without permission from the author.

****

A Rubick's Cube puzzle presents far less frustration than attempts at unscrambling "numbers" transmissions.

****

A BIG WELCOME TO SUSAN MOLL

It's nice to have you as a reader, Susan. Thanks for the letter. Susan passes along some information from a book published by Doubleday in 1982. FOR SERVICES RENDERED: LESLIE JAMES BENNETT AND THE RCMP SECURITY SERVICE by John Sawatsky contains references to a Soviet spy that was not exactly enamored with secret radio transmissions, 5-digit groups or one-time pads.

Susan concludes by saying that this spy never made use of this cipher pad twice. **Never used twice** is very correct, Susan.

Since each page of a one-time pad is destroyed after use, it's highly unlikely that the same groups would be transmitted days, weeks or even months

www.americanradiohistory.com

LOS NUMEROS cont'd

later. It's almost a sure bet that those responsible for 5-digit Spanish transmissions are not using a one-time pad. The high incidence of repeats rule this out.

Don't be a one-time contributor, Susan. Let's hear from you again. Your city and state were not published because my editor forgot to forward your envelope with your letter. Too much fresh mountain air and clear water, Bob?

THE BECKETT CIPHER REVEALED

26432 85447 89354 24825 54632 71458 equates to the word: BINARY.

This is almost as exciting as the revelations contained in the Beale ciphers, James. Here's how the Beckett cipher was constructed:

odd numbers = 1 / even = Ø

16 8 4 2 1	16 8 4 2 1	
2 6 4 3 2	0 0 0 1 0	2=B
8 5 4 4 7	0 1 0 0 1	9=I
8 9 3 5 4	0 1 1 1 0	14=N
2 4 8 2 5	0 0 0 0 1	1=A
5 4 6 3 2	1 0 0 1 0	18=R
7 1 4 5 8	1 1 0 1 0	26=Y

TO: KGB 8TH DIRECTORATE, WASHINGTON

Why don't all of you guys defect? I'm sure you realize that the USA is a real class act.

Is it really true that your military was responsible for the recent Aeroflot disappearance near Sakhalin?

VERY IMPORTANT

Don Schimmel just might have hit on some very important information regarding those weird-looking CW transmissions that were copied during April on 13463 kHz. Don, in his July Monitoring Times column, makes reference to the following CW groups: TAR RGTIT NGWTR which were repeated frequently on 8 April at 2149Z.

Don also mentions several other groups that were repeated on this same frequency. This is most curious, Don! It seems that ALL of the 5-character groups you mention have been noted in the 5-character CW crypts on 3090 and 4030 kHz during daytime hours of the past few months. (The repeat frequency of 4030 kHz has now been replaced by 5080 ±2 kHz).

TAR, TIU, RUM and UDD have also been noted as identifiers(?) on some of the CW transmissions.

I also wonder if there is any relationship between the ØA call you reported on 13216 kHz and ØA2, ØA3 and ØA4. The latter three are often repeated continually at various times between 6802 and 6840 kHz.

Could be that we have one of the missing links here!

THE CW CRYPTO ALPHABET

New to "numbers" monitoring? The Morse groups alternate with the voice Spanish transmissions on 3090 and 5080 kHz and several other frequencies. The Morse characters for 5-digit broadcasts equate to: A=1, N=2, D=3, U=4, W=5, R=6, I=7, G=8, M=9 and T=0.

This appears to be the same crypto alphabet that Don Schimmel reports on 13463 kHz.

Monitors are reminded that the Morse transmissions appear to be more common between 1300 and 2200 hours than at other time periods.

A BIT OF INTRIGUE?

Here is a part of a letter some months old:

"...Spanish 4-digit transmissions are, for the most part, **disinformation** (italics mine) by U.S. Intelligence. I might add that these transmissions have been directly linked on numerous occasions to DOD installations, and is generally well-known and considered to be a minor inconvenience to the Cubans.

"The Spanish 5-digit transmissions are run by DGI (Cuban Intelligence). They have an established net that includes several **U.S. installations** (italics mine) as well as facilities on Cuba. However, one should note that a small portion of these type transmissions are sponsored by anti-Castro Cuban terrorists both in this country and in Cuba.

"There has been, for example, one 5-digit Spanish station run by DGI in **South Florida** (italics mine) for nearly 15 years. Most of the time this station has been located in various residences in the Hialeah area. Other times in Key Largo..."

Since this letter was unsigned, **I will not vouch for the credibility of the above statements.** It's also in the realm of possibility that the above statements are nothing more than disinformation.

To protect this unknown writer's identity, no other portions of this letter will be published; I do not intend to "burn" this source.

MARTI SOCKS RADIO AUSTRALIA

A big thanks to the person that forwarded me the clipping from a Canadian newspaper regarding Radio Martí. It seems that Martí was operating on the same short-wave frequency as Radio Australia the first few days. Need I say more?

Can't mention this person's name or location since the postal service really did a number on the envelope and the contents. If this contributor will send me his or her name, I'll see that proper recognition is rendered.

LIVE AND ELUSIVE

Live and sporadic 5-digit Spanish transmissions continue to be monitored on various 80 meter ham frequencies and some 5 MHz frequencies. The latest being 5188 kHz at 0300Z on 4 July 1985. No established pattern for these transmissions by a YL with a "sing-song" delivery has been ascertained. She could turn up anywhere.

WHERE TO LOCATE

Zel Eaton of Missouri fame tells me that he has been unable to locate CAREERS IN SECRET OPERATIONS: HOW TO BE A FEDERAL INTELLIGENCE OFFICER by David Atlee Phillips. Try the following address, Zel:

University Publications
of America
44 North Market Street
Frederick, MD 21701

This excellent publication is available in both paper- and hard-back.

Readers are reminded that it was David Phillips that founded the Association of Former Intelligence Officers (AFIO).

SPECIAL REPORT

A source tells me that the Senate Intelligence Committee has a limited number of their report on Soviet Intelligence activities at the U.N. If you desire a copy, contact the committee at 219 Hart Senate Office Building, Washington, D.C. 20510.

Monitoring Times readers might also be interested in obtaining a copy of Amendment no. 322 as outlined in the Congressional Record of June 10, 1985 (Vol. 131/No. 76). Write your local representative for a copy of this timely amendment.

ANOTHER VARIATION

Susan Moll and other readers might be interested in this variation of the inviolate one-time pad. In brief, here's how it works:

Pg.	A	B	C	D...
001	69310	89765	03945	99132

Pg.				
001	87213	56911	38214	57778

To encipher or encrypt the word "CAB":

03945 69310 89765
87213 56911 38214
26732 13409 51551

(Note that we are utilizing "non-borrowing" subtraction to arrive at our groups to be transmitted.)

To decipher or decrypt:

87213
26732
03945 = C

(Note that we are utilizing "non-carrying" addition for this final phase.)

Sender and receiver MUST have identical copies. Copies are also destroyed after use.

The above crypto system is presented for entertainment purposes only.

If--and I stress the word IF--reader response dictates, I'll illustrate the procedure to create a histograph for "numbers" transmissions. This will be presented in a future issue if demand so warrants.

ACTIVE NUMBERS FREQUENCIES

The Apple no sooner finishes churning than an apparent frequency shift occurs for 5-digit Spanish transmissions. Hopefully, in the next few weeks, I'll be able to provide readers with an updated frequency list.

Some frequencies to watch: 3090, 3445, 4010, 4027, 4820, 4825, 4835, 5080, 5085 and 5090 kHz.

STATEMENT OF POLICY

ALL CORRESPONDENCE addressed to this column will be assumed to be intended for publication unless otherwise indicated. Your correspondence may also be commented upon editorially. Your name and state will also be published unless otherwise requested.

UNDER NO CIRCUMSTANCES WILL ANY OF YOUR CORRESPONDENCE BE TURNED OVER TO ANY GOVERNMENT AGENCY.

I thank all of my readers for their letters. Every effort will be made to acknowledge your letters in future columns. Your past and future support is most appreciated.

THANKS TO

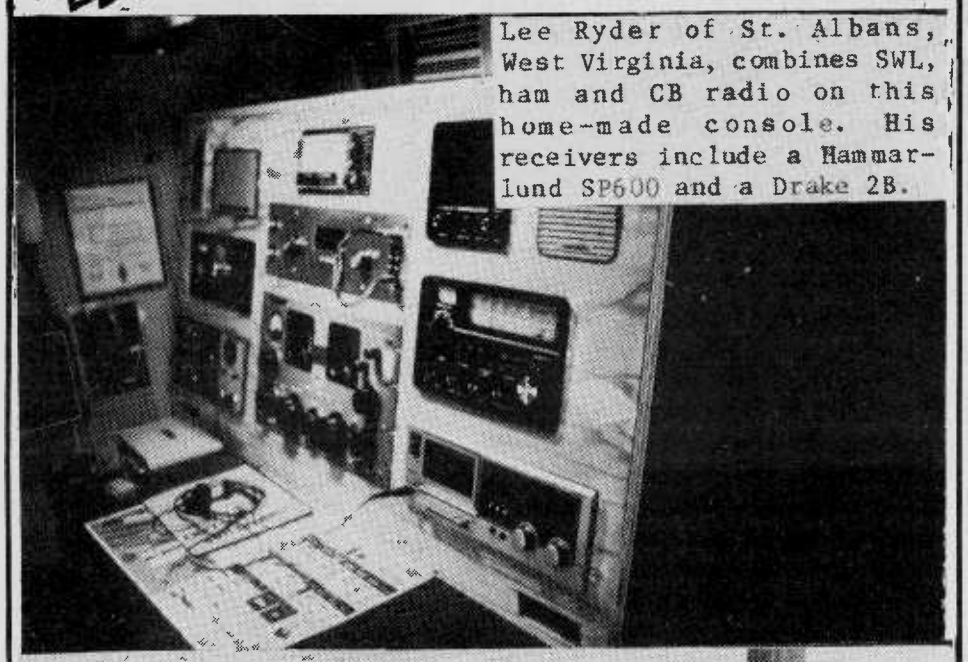
Zel Eaton, James Beckett, Don Schimmel, John Santosuosso and Susan Moll.

Time now for a Lone Star and
... Adios,
Havana Moon y Amigas

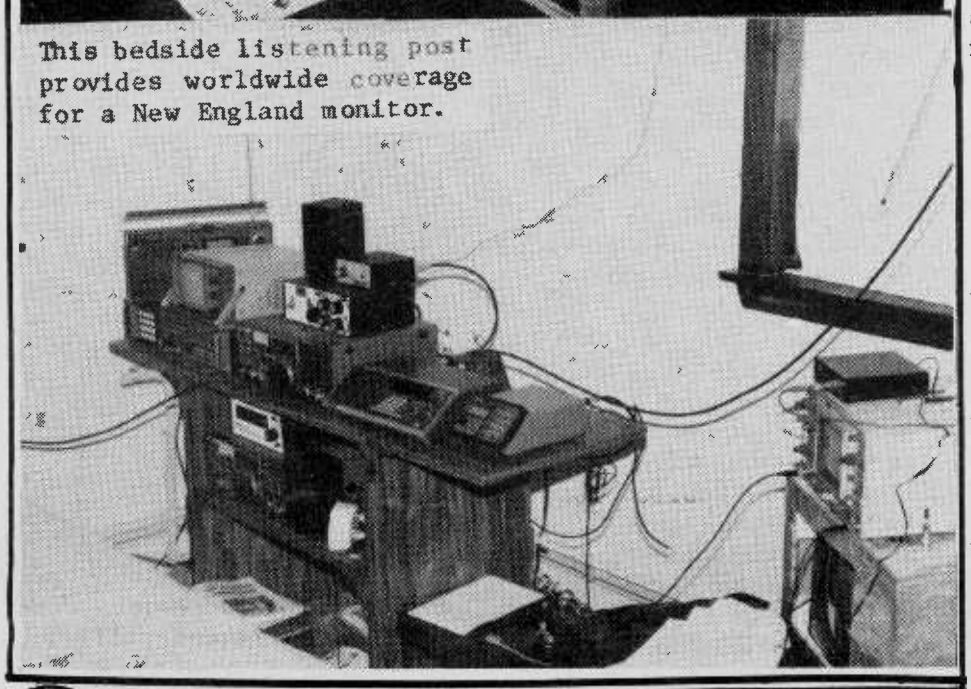
The views expressed in this column are those of Havana Moon and do not necessarily represent the views of the Monitoring Times management, staff or readers. ●

www.americanradiohistory.com

MONITORING POST



Lee Ryder of St. Albans, West Virginia, combines SWL, ham and CB radio on this home-made console. His receivers include a Hammarlund SP600 and a Drake 2B.



This bedside listening post provides worldwide coverage for a New England monitor.

TV IN THE "GOOD OLD DAYS"?

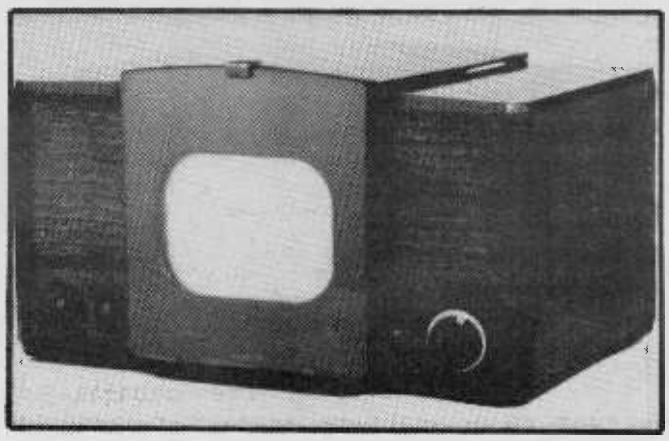
by Ken Greenberg

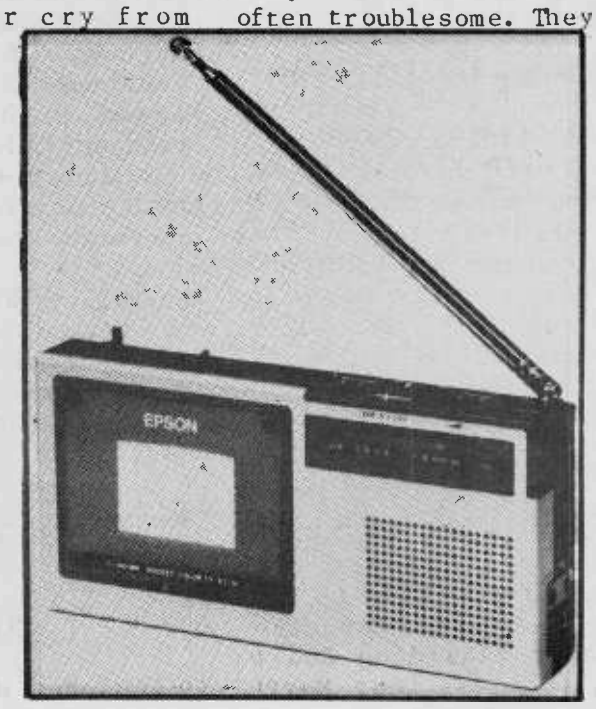
In 1948 I bought my first television, a 12" Zenith round-screen combination AM-FM radio phonograph with two Cobra tone arms--a red one for 78 rpm records and the green one for the new "long play" 33-1/3 records. It cost $600 and played superbly for 20 years during which time I worked as a TV repairman part time. Here are some observations and comments on a few of the early sets.

The first TV I ever saw was a 7" RCA 630 in a department store in 1947. What a breeze that set was to service because you didn't have to take the chassis out of the wooden cabinet. The top and bottom of the cabinet were easily removed. A far cry from today's sets!

TV THEN AND NOW...A study in contrasts

RCA 630-TS, 1946 EPSON pocket portable





Many of the early sets had in excess of 30 tubes and were built like battleships and weighed a ton. No fun lugging one of those chassis up and down three flights of stairs on a hot summer day! Fortunately, much of the trouble in these early sets was caused by bad tubes, so a lot of time was spent with your tube tester.

Zenith heavily advertised their round screen "Opera Glass Tuning" with vivid comparison to everyday round optical things such as the human eye, camera and binocular lenses. Eventually, they put a switch on their sets that would square off the picture on the round screen. Then they went to rectangular screens like everybody else. I believe Stromberg-Carlsen also used round screens for a while.

Putting up an outside antenna in the early days was no simple chore; there was practically no convenient mounting hardware readily available as there is today. I did plenty of improvising with pipe strapping and long bolts.

Small 7" and 10" screens were often fitted with large, ugly, bulky magnifiers. They worked to some extent but reduced the side viewing angle. Eventually, one or two enterprising manufacturers came out with flat Fresnel type magnifiers but, by this time, the picture tubes were getting big enough for comfortable viewing alone.

BELLS AND WHISTLES

Dumonts were the Cadillacs of the TV industry for a time. Some were massive with 30-inch picture tubes. Both Dumont and Crosley used continuously-variable tuners that included the FM radio band between the upper and lower channels. The tuners were smooth with no switch stops (detents), but were often troublesome. They used complicated dial string slug tuning in the inductors...a major headache to service.

Sylvania came out with a gimmick called "Halolite"; it was supposed to make viewing easier on the eyes and consisted of a florescent illuminated mask around the edge of the picture tube. "Halolite" soon vanished like so many other useless gimmicks. It was always fun to watch for each new year's feature!

I recall working on a Sylvania that had two parallel high voltage rectifiers. Most sets had one, but in this particular model, the tubes (1x2's I think) were permanently soldered into their sockets--that's right, every pin! Sylvania claimed these tubes would never need replacing. They were wrong and what a nightmare to repair.

Just to add a little more aggravation to the job, some manufacturers would put a unique tube in their set, a tube that only they sold. I recall chasing over to the Admiral plant for this reason on more than one occasion.

The Hallicrafters company, noted for communications receivers, came out with a novel 7" set in a metal cabinet that looked much like their communications receivers. The novel part was that the channels were selected by a row of 13 push buttons.

These buttons failed in short order due to rapid oxidation of the switch contacts. The picture never held and the contacts had to be cleaned very frequently. It was a dog of a set to keep customers happy.

In an attempt to modernize what were still essentially "boxy"-looking sets, Philco came out with its "Predicta" model on which the picture tube was sitting in a streamlined housing by itself on top of the cabinet. The picture tube could be rotated about 90 degrees and this feature caused no end of trouble with frayed wires running up to the picture tube socket. I recall them advertising one model where the picture tube could be placed many feet away from the cabinet by the use of a long fat cable. That one was horrible to service!

As the years passed, the number of tubes in the sets decreased due to the development of more multi-purpose tubes. Both "Mad Man" Muntz and DeForest-Sanabria championed sets with a minimum number of tubes. I recall working on a

www.americanradiohistory.com

TV NOSTALGIA cont'd

Muntz that had 14 tubes at a time when most other expensive sets still had 20. The cheap sets broke down frequently as most of the tubes were overdriven electrically.

I remember early projection sets quite well as a girl I was dating had one of these expensive Philco monsters. It had about a 16" square screen with a very fuzzy picture that had to be viewed in an almost toally dark room.

At the now-legendary Allied Radio corporation (long gone and sorely missed) I recall seeing outboard Norelco projection units on sale for $69.00. The units used most of the circuitry of a conventional set with the exception of the optical system that used a 2" overdriven picture tube and a series of projection lenses.

Some fancy taverns used these units for a fuzzy--but passable--five or six foot picture. Chicago's Museum of Science and Industry also had a huge projection screen where you could see yourself on TV.

TIME MARCHES ON

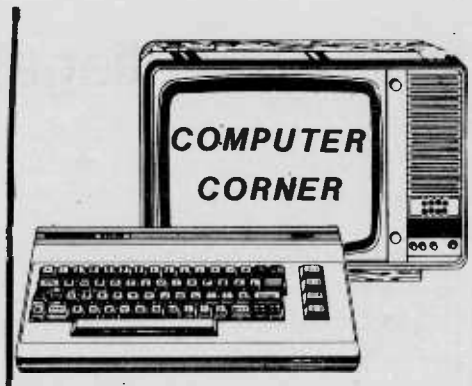
As the years wore on, the number of new tubes kept me busy updating my Heathkit tube checker with new charts and sockets. There were tiny nuvistors and eventually the massive compactrons. As transistors and printed circuit boards began appearing in TV sets, I started losing interest and patience with servicing. When I had to get a jewelers loupe to look for printed circuit board cracks or bridges, I knew it was time to quit.

AND THEN CAME COLOR

I went to a couple of CBS demonstrations of their spinning wheel color set in the early 1950's. I was impressed by the quality of the color, but what a non-compatible mechanical monster it was! I was astonished the FCC approved such a system.

Along about that time some enterprising fly-by-night companies began selling multi-colored clear plastic masks that were taped over the black and white picture tube to give a sense of seeing a color picture...and for $7.95.

As an old timer with TV, I find the new sets amazing, but boring. They all look alike and from what today's servicement tell me, they are miserable to service. ●



by
C.W. Ellis
P.O. Box 202
Ulster, PA 18850

Have you ever stopped to think how many personal computers have been sold?

Taking a wild-eyed guess at the number of major manufacturers of personal computers selling here in the U.S. let's set the number at two dozen. Assume that IBM was tops for last November at 95,000 machines and that the 24th manufacturer sold only one tenth this number (9,500 machines) and if we further assume that the remaining 22 manufacturers were evenly distributed along the sales scale, we can conclude that approximately one half million personal computers were sold during that month alone!

If we then rationalize that the previous months were leaner than this, and only a few machines were sold each month at the start of the computer movement, we wouldn't be too far off if we averaged things out to 250,000 per month overall. We come up with a mind-boggling 7,500,000 personal computers sold in the last two and a half years!

IBM alone had sold approximately three million personal computers by 1985. We haven't even touched the peripheral world--the add-ons that are invariably purchased after the pc is obtained. And don't even try calculating the software sold to run on these machines.

SO WHAT ARE WE GETTING AT?

All of the above brings me to this point: If only one pc in ten fails, how much will the computing public spend in repairs in one year? And how do you go about cashing in on some of this repair work?

Computer troubleshooting is not exactly like TV repair, although the electronics training is necessary. Being a genius at mechanics is not a requirement, but you must know your way around the usual assortment of nut drivers, sockets, screwdrivers, and so forth. A good head for business is a must, though.

The more lucrative repair work will be in service contracts, and more repairs for less money will characterize the repair business if you cater to individual owners. Not that you won't be giving value when you enter into service contracts; you will of necessity have to charge more to cover the larger inventory needed to keep on servicing business-use type machines.

No business can afford lengthy down time if the running of the business depends on the computer. A businessman can easily stand to lose hundreds of dollars every hour his machine is down. Such an owner could care less if you charged him twice what you feel would be right for an individual as long as you had the required parts on hand and repaired the machine immediately.

Naturally, a repair business isn't going to make a whole lot of money in a small town, so the first requirement is to line up a number of potential customers. For service work on an individual basis, this means a large city with lots of pc owners. If the business end of servicing work appeals to you, then it matters not where you are if there are a number of businesses around using one or more pcs. This includes end users such as insurance and real estate brokers, accountants, financial analysts, schools, and a host of manufacturing concerns. These people are naturals for service contracts.

In lining up your service customers, decide in advance if you intend to specialize in one brand of computer or take on any and all makes. Each new model you intend to service will require additional parts, service manuals, etc. There are advantages to servicing only one or two brands if there are a sufficient number of them installed in your area.

If, for example, you decide to service only Apple computers, you won't need to stock parts for anything but an Apple. Should you decide to service all major brands, you now need an Apple replacement disk drive, and one for an IBM, a Compac, an Eagle, and on and on. Ditto for the mother board, the power supply, the adapter cards; the list is a long one.

Naturally, if you offer service contracts, you must build your reputation on speedy repairs, machines that stay fixed once you fix them, and loaner equipment for the ones that have to go to the shop.

As to equipment, you will need a good dual-trace triggered scope, a DVM, several special test diskettes for checking alignment and performance of disk drives, and all the diagnostic programs you can get your hands on. In addition you will need manufacturers' service manuals, schematics, and system software (such as DOS - Disk Operating System - for the IBM and compatibles). And you must have the version that the customer is running. IBM has released no less than five versions of PC-DOS to support the various machines in its product line.

Training on the machines you intend to service is an asset, and some manufacturers offer factory training courses for authorized repair technicians. Any ham or audio hobbyist who can use a scope and understand rf and audio electronics and can read a schematic should have little trouble learning to repair computers. In fact, even people without a bench full of fancy test equipment can do some troubleshooting and at least localize the problem. Many computers, suddenly taken ill in mid-stride, can be fixed by substituting parts.

A FEW HINTS

Perhaps your monitor died. Just try a new one. If the new one doesn't work, swap the adapter card if the machine uses one. Memory checks? Run the memory diagnostics, note the failing memory bank address, and swap chips around. If the problem moves to a different bank, you have a bad chip. If not, a bad memory card itself. Anyone can learn to run and interpret diagnostic programs; there will be some tough ones, but that's true of any profession.

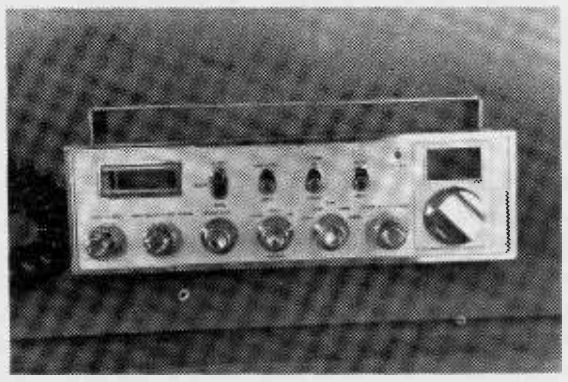
Are you into servicing or modifying scanners? If you can repair a scanner, you can fix a computer. You didn't know how to fix your first scanner until you tried, did you? Servicing computers is the same thing.

Recent figures put the population of these United States at 225,000,000 people. If you figure four people to a family, and one

☞

www.americanradiohistory.com

ILLEGAL CB?



by Pete Haas (Kent, OH)

This 27 MHz mobile transceiver is basically a Cobra 148 GTL. It is not FCC type-accepted because in addition to the normal CB band coverage it goes 40 channels above and 40 channels below the regular 11 meter band. The clarifier also varies the transmit frequency ±7 kHz.

The 4-watt AM 12-watt PEP SSB transmitter includes FM and CW modes; there is a miniature jack in the back to plug in a code key. A "roger beep" at the end of any voice transmission produces a short tone burst to signify you've let go of the mike key. The beep can be internally defeated (or made optional with a switch) by cutting a single wire labeled "peep" on the PC board.

The unit is wide open for modification. Extra channels can be added by changing the addressable digital inputs; by changing a crystal and tweaking the transmitter all of the channels could be put on the 10 meter band. The transmitter "sliding range" can be increased a few more kilohertz if you bypass a fixed resistor in line with the clarifier pot.

Many CB'ers these days are running modified ham gear--mostly Yaesu or Kenwood transceivers (with their power mikes cranked up way too high, I might add). They operate on frequencies slightly outside the regular 40 channels. By tuning around this space with a general coverage receiver you'll occasionally hear them operating FM just to be different, such as the group in southern California on 26.515.

These non-type-accepted transceivers are available at small CB shops and through mail order houses. While targeted for the outlaw CB HF'er, with a little modification they would be ideal all mode 10 meter rigs. The present going price is around $250.

Those Illegal Transceivers

by Bob Grove

"FCC SEIZES ILLEGAL RADIOS..." the news release begins. Just what are these radios and what makes them illegal?

Although the former citizens band, now part of the Personal Radio Service, has become deregulated, the former technical regulations still apply: 40 channels, 26.965-27.405 MHz, AM only, 4 watts output, crystal control, etc.

Let's take a look at one contraband rig imported from the Orient which violates the provisions. Why are they even in mass production? Different countries have different regulations; with this rig, you can take your pick!

The transceiver pictured here is capable of 240 channels of operation (6 banks of 40) using five modes (AM, FM, USB, LSB, CW); it has a VFO for "coarse tuning" on transmit and a maximum output power of 12 watts. Frequency range is 26.065-28.755 MHz, overlapping industrial, government and amateur authorizations.

The 240 channels are divided into six bands as shown in the table below; band "C" is appropriate for U.S. allocations.

Band switch Position	Frequency Range
A	26.065 to 26.505 MHz
B	26.515 to 26.955 MHz
C	26.965 to 27.405 MHz
D	27.415 to 27.855 MHz
E	27.865 to 28.305 MHz
F	28.315 to 28.755 MHz

The illegal look-alike: a wolf in sheep's clothing?

COMPUTER CORNER cont'd

TV set per family, one VCR for every third family, one stereo for every other family, and a personal computer for every tenth family, there is a lot of electronic service work out there. And we didn't touch on the many other electronic devices that abound - tape decks, video games, calculators, and telephone devices.

Figure a way to service such devices and add computer servicing to your list of servicing; there will be plenty of work. Ask yourself right now where you could take a computer in your town for service. Chances are the answer is "where I bought it." The salesroom is not the best place to ask for service.

●

HELPFUL HINTS

SUPER LONG PLAY TAPE RECORDERS

Although not really a new product, we have had many requests from scanner users over the years for sources of long play tape recorders for off the air recording that we thought we would introduce one company and its products to our readers.

While we have had no experience with this company, their ads have appeared on a regular basis for several years. AMC Sales, Inc., Dept. MT, 9335 Lubec St., Box 928, Downey, CA 90421 (Ph. 213-869-8519) offers a 10-hour modified Panasonic Slimline recorder for $95 plus $4 shipping and handling; a 14-hour model is available for $159 plus $4.

Additionally, AMC has a phone recording adaptor ($24.50) and a voice activated control switch ($24.95); add $1.50 for shipping and handling.

For more information, contact AMC directly and let them know you read about them in Monitoring Times.

GETTING STARTED

by John Avery

ANTENNA GAIN...Lose a Little Gain a Little

A Guest Article
by W. Clem Small, KR6A

"You never get something for nothing!" That's an old and true saying in antenna work as well as in the practical world of "hard knocks." You've probably heard the term "gain" used in reference to the performance of antennas. When we use a "high-gain" antenna, we understand that we can expect greater signal output from that antenna than from some other antenna with less gain. That sounds wonderful, but the "something" which we must "pay" for this increased gain is that we also lose signal output!

Yes, a high gain antenna is usually also a "low gain" antenna. How can this be? Well, antenna gain is not analogous to the "gain" of an amplifier, and an explanation of just what antenna gain is may help clarify the situation. Read on!

In a recent electronic reference work we find: "Antenna gain is measure of the effectiveness of a directional antenna as compared to a non-directional antenna...The more directional an antenna, the higher is its gain."[1] So basically gain antennas are directive antennas. In transmitting, gain for an antenna is the taking of the signal energy supplied by the transmitter to the antenna, and making more of it go in the direction of the station with which you wish to communicate than in other directions.

In receiving, gain is the same thing in reverse--collecting signal energy from the direction of the station with which you wish

☞

www.americanradiohistory.com

EX. WORKSHOP cont'd

to communicate more than from other directions.* You gain signal strength in the desired direction at the loss of signal strength in undesired directions, a rather desirable state of affairs since this helps eliminate atmospheric and man-made interference from the undesired direction as well as improving signal strength in the desired direction.

Stated in other words, an antenna with gain has a directional pattern of reception or transmission. These directional patterns are familiar to most radio operators as antenna "radiation patterns." It is often said that "one picture is worth a thousand words," so let's take a peek at figure one here.

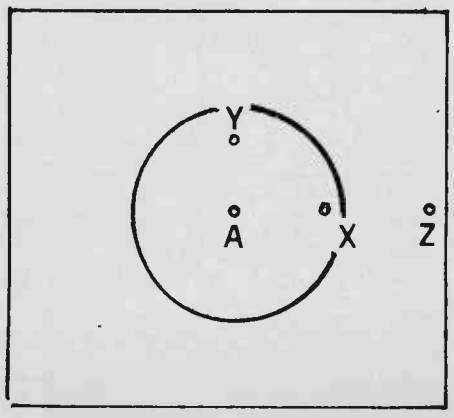


Fig.1. Horizontal radiation pattern of a nondirectional vertical quarter-wave Marconi antenna. See text for explanation

Figure one shows the horizontal radiation pattern of an antenna (A). The perspective of the figure is that of an ordinary map, looking down from above the station. Being non-directional, A sends its signals out equally to all points of the compass. The large circle on figure one indicates the outer limits of usable signal strength from A.

In figure one, the receiving stations at positions X and Y both can receive, at a comfortable level, the signals transmitted from the antenna A. The receiving station at position Z is outside the comfortable listening signal level (in the fringe area). Thus, Z cannot receive the signal from A well.

Before we look at figure two, let me ask you: "What happens when you put a reflector behind a light source?" The reflector makes the light seem brighter in the direction in which light is reflected, and blocks off light to the back of the reflector. Well, that's the general sort of thing that happens when you put an appropriate reflector near an antenna.

For one type of directive antenna, a reflector can be an antenna similar to the radiating element A. The spacing between the radiating antenna element and the reflector is important in determining the length of the reflector, but we don't need to discuss that in this article. In figure two we see that a reflector, (R), has been added to the antenna of figure one.

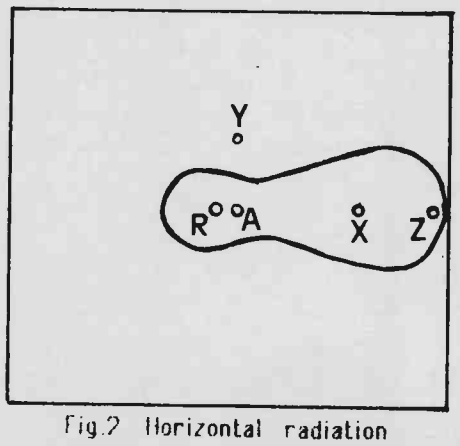


Fig.2 Horizontal radiation pattern of a two element directional beam antenna developed from the antenna of figure one. See text for explanation.

We should note here that the dimensions of figures one and two are not drawn-to-scale in regards to the distance from the antenna to the stations. The figures do, however, give an accurate representation of the sort of action we are describing. The reflector catches energy radiated toward it from A, the radiating antenna, and sends it back in the direction of A. This action produces the radiation pattern shown in figure two.

In a directive antenna such as the one described here, the reflector is not connected to the transmitter; its job is to reflect rather than to serve as an active radiating element. Due to the reflector taking its operating signal from the radiating element, the antenna is called a "parasitic" beam antenna.

In figure two, because of the shaping of the signal into a "beam" by the reflector, the receiving station located at position Z now has a useful signal. The gain from this directional antenna now produces a comfortable reception level at that station. Notice, however, that as the antenna radiation pattern is shaped by the addition of the reflector, there is a signal "loss" in the direction of station Y. The result of this shaping is that receiving station Y can no longer receive intelligible communications from the station at A.

- The description given in this paper indicates only one of several ways in which we may construct a beam antenna to obtain the directional selectivity which makes a beam antenna so useful. However they are constructed, beam antennas, as mentioned earlier, give us that directional selectivity which provides maximum signal in the preferred direction in both transmitting and receiving, while rejecting unwanted signals, static and other interference from undesired directions in receiving.

One of the popular directive, high gain antennas of today is the Yagi beam (more accurately the "Yagi-Uda array"). You might think that this fine beam antenna is a relatively modern design, but the Yagi has been with us since 1928--nearly 60 years ago. Historically, this antenna became popular due to work published by Yagi,[2] in which he gave Uda the fair share of credit which Uda deserved for development of this antenna. Later writers often ignore Uda's contribution and incorrectly call the Yagi-Uda simply the "Yagi."

By the way, next time you see a multiple element Yagi-Uda antenna, look at it for a few seconds and think of a fish skeleton. Then you'll see how it got its nickname of "fishbone antenna" (not to be confused with the old "fishbone" wave antenna)!

EARLY DIRECTIONAL OR GAIN ANTENNAS

Karl F. Braun, the man who, in 1909, shared the Nobel prize with Marconi for developments in wireless, invented one of the first directional beam antennas in 1905.[3] An operator could rotate its directional beam by changing the manner of connecting the antenna to its feedlines.

Even earlier, Heinrich Hertz who, in 1887, first displayed electromagnetic radiation convincingly to the scientific world, developed a highly directional beam antenna.[4] It was a cylindrical type of parabolic reflector antenna and, believe it or not, it is the distant ancestor of the popular parabolic dish-antennas used in radar, repeater work, satellite communication, TVRO, and other microwave work today.

Marconi seems to have been the first to use a dish-shaped parabolic antenna reflector (as contrasted to Hertz's earlier cylindrical parabolic refelector). The radio historian, Dunlap, tells us that Marconi used a: "...parabolic copper reflector or bowl, two or three feet in diameter, thereby shaping the waves into narrow strips, in much the same way that a searchlight stabs a streak through the darkness."[5] This was 1896, and Marconi's bowl was destined to evolve into the dish antenna which is still growing in popularity today.

So, the next time you hear some glib-tongued "know-it-all" getting a bit too enthusiastic about how far modern communication systems have come in today's "hi-tech" society, ask him when he thinks the first parabolic reflector antenna was designed. When he recovers from the shock of learning that it was in the 1880's, maybe you can even teach him a bit about the concept of antenna gain. ●

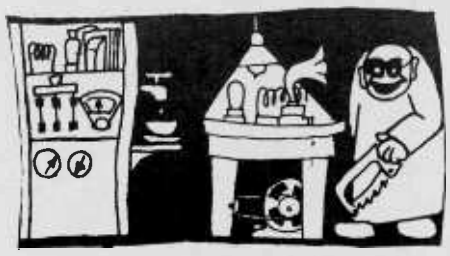
*This reciprocal relationship between the functioning of an antenna in the receiving mode, and the same antenna in the transmitting mode, is the basis for the well-known principle of antenna reciprocity.

REFERENCES

1. McGraw-Hill Encylclopedia of Electronics and Computers, Sybil P. Palmer and staff, Eds.. New York, McGraw-Hill Book Co., 1982, p.370.
2. Yagi, Hidetsugu. Beam transmission of ultra short waves, Proceedings of the Institute of Radio Engineers, June 1928, 10, 6, pp. 715-741.
3. The Development of Wireless to 1920, George Shiers, Ed. New York, Arno Press, 1975, pp. 238-241.
4. Hertz, Heinrich, Electric Waves. New York, Dover Publication, 1962. This is a re-publication of an 1893 work first published by the Macmillan Co.
5. Dunlap, Orrin E., Jr., Marconi: The Man and his Wireless. New York, Macmillan Co., 1937, p.5.

www.americanradiohistory.com

EXPERIMENTER'S



WORKSHOP

Combined Antennas Boost Scanner Reception

by Greg Doerschler N1DEM

Although thoughts of connecting more than one antenna to a scanner often enter the minds of scanner DXers, most who try this meet with limited success. However, if done properly, coupling separate antennas for different bands to one scanner can provide improved reception over a single multiband antenna.

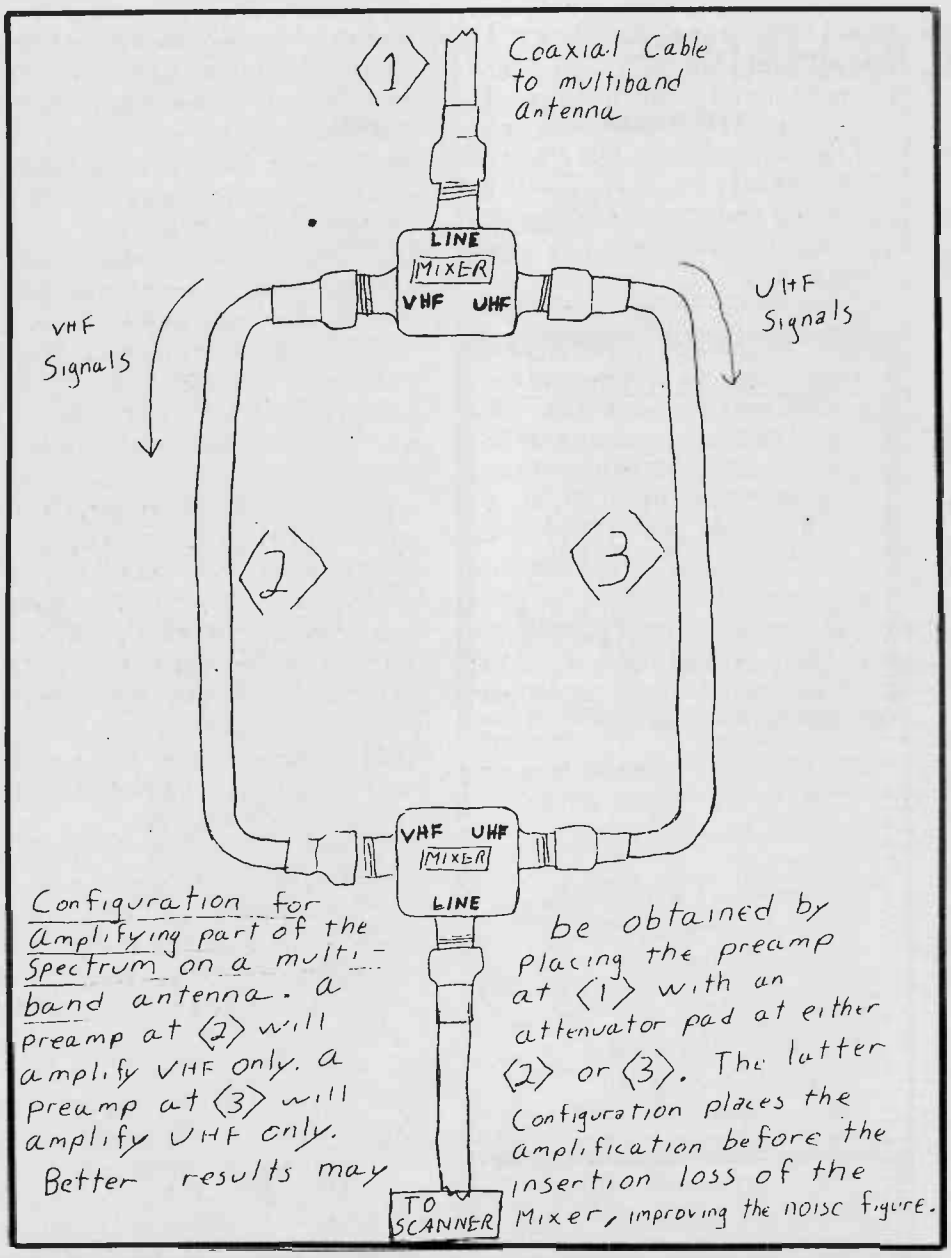
Triband scanner antennas provide adequate but not optimum performance in most cases. Some antennas which claim to be triband are actually single or dual band antennas with the remaining band(s) "tacked on" as an afterthought. Others provide good wide spectrum coverage but do not really excel in any one band.

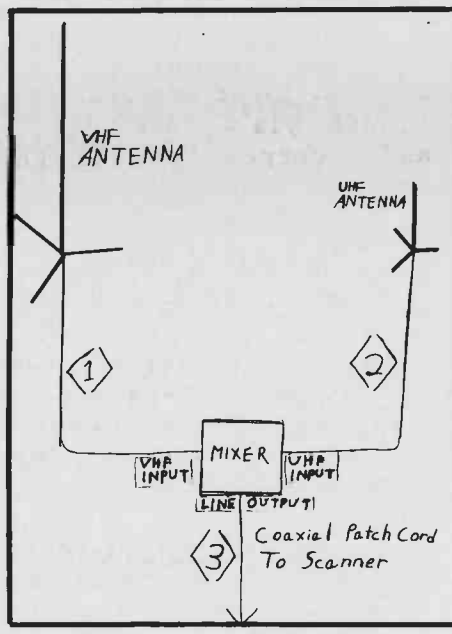
Being highly demanding when it comes to scanner reception, I chose to install separate antennas for different bands. The pair which worked best for me was an Antenna Specialists VHF Hi-Lo dual band ground plane and an amateur radio 440 MHz antenna retuned to 460 MHz.

The Antenna Specialists antenna provides outstanding coverage of both VHF bands, but is not designed for UHF; likewise, the amateur antenna produces excellent results in the UHF spectrum, but only local coverage on VHF.

In order to cover all bands simultaneously without continually switching coaxial cables, both antennas need to be coupled together. But splicing the cables together will produce a significant impedance mismatch and even if a signal splitter is used, coupling effects between the two antennas will likely cancel any additional gain that each antenna alone could produce.

Even though the antennas are designed for different frequency ranges, they still must somehow be separated electrically to avoid interacting with one another. In essence, the scanner must "think" that it is looking at the UHF antenna alone when receiving a UHF frequency, and the VHF antenna alone when receiving a VHF frequency.





Basic set-up for using a mixer to combine antennas. If a preamplifier is used, best results will be obtained by placing it inline at <1> (to amplify VHF) or at <2> (to amplify (UHV). The entire spectrum can be amplified by placing the preamp at <3>, but there will be some additional noise on the signals because the insertion loss of the mixer is before any amplification.

Experimentation has shown that a toroidal 75 ohm VHF-UHF signal mixer (sometimes called a "separator/joiner") designed to couple independent VHF and UHF television antennas into a single line works well for scanner applications too. The mixer which I acquired is about 1" x 1" x 1/2" and has three female "F" connectors on it; a UHF input, a VHF input and a line output.

The VHF/UHF mixer looks like a 75 ohm signal splitter designed to couple two television sets into a single antenna, but do not confuse the two. The mixer separates VHF and UHF signals, while a two-set coupler will feed the same signals to each of two outputs. Thus, a UHF signal injected into the VHF input of a mixer will not pass through and vice versa.

Mixers or separator/joiners are available from MATV (Master Antenna TV) dealers, distributors and installers. Brand names include Kay-Townes (Rome, GA) and MACOM (Van Nuys, CA) as well as others.

Mixers or separator/joiners are available from MATV (Master Antenna TV) dealers, distributors and installers. Brand names include Kay-Townes (Rome, GA) and MACOM (Van Nuys, CA) as well as others.

Adapters to interconnect with F series connectors are available from Radio Shack and mail order catalogs, but it is best to simply convert your coax connectors to F style where attached to the mixer to avoid unnecessary signal losses.

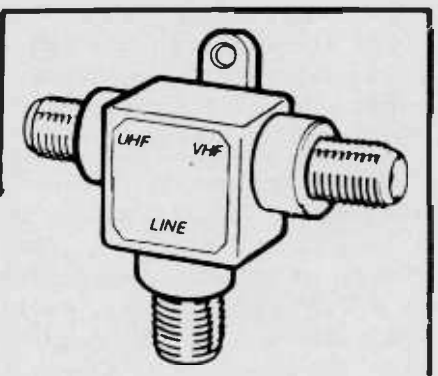
Coaxial cables from both the VHF and UHF antennas are connected to the mixer and a coaxial patch cord runs from its output to the scanner antenna jack. The mixer could be mast mounted, but this eliminates any possibility of later separating the antennas. Note that Grove 75 ohm CBL coaxial cable works well with these mixers.

In actual practice, there will be slight attenuation as signals pass through the mixer, but this is more than offset by the use of two high performance antennas. An antenna preamplifier installed before the mixer will negate any losses incurred, but if you want to use the preamp on all bands you'll have to put it after the mixer.

I find it handy to be able to use the preamp only to boost weak UHF signals, as I get lots of unwanted signal overload when it is used on VHF.

If two mixers were placed "back to back" in line with a multiband antenna, the signals would first be separated and then recombined. A preamp placed between the two would allow the user to amplify either VHF or UHF independently; useful if intermod is a problem on the opposite band with a preamp in use. But there will be some attenuation on the unamplified bands due to the two mixers in line.

I have tested these mixers and found that the VHF input passes signals from 30 MHz-174 MHz, while the UHF side passes signals 440 MHz and above. I did not have equipment to test between these ranges, so check the specifications to avoid any "gap" between where the VHF input stops passing signals and the UHF side picks up.



UHF/VHF SEPARATOR JOINER

www.americanradiohistory.com

STOCK EXCHANGE

PERSONAL

NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: $.10 per word, paid in advance. All merchandise must be non-commercial and radio-related. Ads for Stock Exchange must be received 45 days prior to the publication date.

ICOM R70 Six months old with original box, manual, extra fuses, $450 includes UPS shipping and insurance. Louis Mauroner, 6188 San Juan, Baton Rouge, LA 708111 (504)357-2041.

>>>>><<<<<

WANTED: Power transformer for HALLICRAFTERS S-X-99. If cheap enough will buy entire radio for parts if transformer is good. Ken Murray, 1006 1st NE, Ephrata, WA 98823 (509)754-4853.

>>>>><<<<<

FRG 9600 YAESU VHF/UHF receiver, new $475. REGENCY K-500 40 channel scanner, needs to jiggle on-off switch $150. REALISTIC DX160 $75. TRAM D-201A CB excellent $375. Call after 2 pm (EST) (803)229-6918.

>>>>><<<<<

For Sale: 14-month-old Japan made 12 band shortwave radio LW/MW/4SW/5VHF/UHF bands, digital 5 digit frequency counter, portable AC, battery and a car radio--$150 money order only, no checks. John Skibinski, 15000 Shore Line Drive, Apt. 215, Sterling Heights, MI 48078.

>>>>><<<<<

BROWN BROTHERS paddle and 500 no address QSL cards. Swap or sell. Kenneth Hand, P.O. Box 708, East Hampton, NY 11937.

>>>>><<<<<

JOIN a radio listening club. Complete information on major North American clubs and sample Newsletter $1.00. ASSOCIATION OF NORTH AMERICAN RADIO CLUBS, 1500 Bunbury Drive, Whittier, CA 90601.

COMMERCIAL

$25 payment must accompany ad. Send 2 1/4" wide x 2" long camera-ready copy or we will type copy (35 words maximum).

YOUR COMPUTER CONNECTION
CALL FOR BEST PRICING !
EPSON PRINTERS-- $ 150 UP
KANTRONICS COMPUTER
INTERFACE AND SOFTWARE
COMPUTER DISKETTES
BEARCAT SCANNERS
REGENCY SCANNERS
C B RADIOS
PANASONIC SW RECIEVERS
ECS BUSINESS SYSTEMS, INC.
136 FAIRBANKS, OAK RIDGE
TN. 37830; (615) 483-4915

LET YOUR C-64 TEACH YOU
THE INT'L MORSE CODE
* step-by-step lessons
* computer testing
* user-defined tests
* menu-driven

I M C T -- tape or disk
$19.95 (Pa add 6%)
AC3L SOFTWARE
P. O. BOX 7
NEW DERRY, PA 15671

CLEARANCE SALE!
ROCK BOTTOM PRICES!!

REGENCY MX4000 scanner $390.00 ($630 retail value) only 1 left!
STEREO HEADPHONES $5.00 ($9.95 value) only 3 left!
BOOKS:
* 1984 World Radio TV Handbook $12.00 ($19.50 value)
* Tailgunner on a Superheterodyne $2.00 ($9.95 value)
* Basic Radio Electronics $8.00 ($14.95 value)
1984 FCC MICROFICHE BELOW COST!!
FCH11 - 1Hz-30MHz $2.00
FCH12 - 30-150.8MHz $4.00
FCH17 - 1Hz-10,000MHz $50

* See Grove Enterprises catalog for full description of all items.
* No charge cards accepted on above sales.
* First check receives item. Limited supplies on all items. All sales final.
* Send check or money order to
GROVE ENTERPRISES
P.O. Box 98
Brasstown, NC 28902

Squelch-it! ADD VOICE TUNED SQUELCH & PEAK/NOTCH AUDIO FILTERS TO ANY RECEIVER! PLUGS INTO HEADPHONE JACK & YOUR SPEAKER. NOTCH THAT CARRIER! PEAK THAT CH/ VOICE! QUIET THAT RIG WITH A SQUELCH-IT! REQUIRES 16 VAC. ...FOR 430$ Stop Scan... OWNERS ONLY! WHEN THE SQUELCH BREAKS, THE SCAN STOPS! SCAN RESUMES AFTER A 1 TO 9 SECOND DELAY. AUTOMATIC! INTERNAL! SQUELCH ACTIVATED! New lower prices
FOR INFO, SEND SASE OR ORDER BELOW:
( ) STOP SCAN KIT.....$19.95
( ) STOP SCAN ASSEM/TESTED..$29.95
( ) SQUELCH-IT $69.95
( ) SQUELCH-IT (less case)..$54.95
( ) AC WALL TRANSFORMER.....$ 6.95
( ) SHIPPING & HANDLING.....$ 2.50
JABCO R1 BOX 386 ALEXANDRIA IN 46001

AM BROADCAST BAND DX'ERS

Interested in hearing distant stations? Sample magazine, info catalog, publications list. Send 60¢ to:
NATIONAL RADIO CLUB
P.O. BOX 118 DEPT. MT
POQUONOCK, CONN. 06064

Listing of all AM stations in North America available.

LISTEN TO THE WORLD ON SHORTWAVE RADIO!
SEPT. 1978 - 1985
RW now 8yrs old!
Catalog-$1.00
RADIO WEST
(619) 741-2891
3417 Purer Rd. Dept. PC
Escondido, CA 92025

IN THE PRESS

We appreciate the news clippings contributed by our readers which often have not been picked up by other radio publications. These are sent by Frank Lutz of Indiatlantic, FL, and R.L. Adams of Charlotte, NC.

BROADCASTS MAY BE HAZARDOUS TO YOUR HEALTH

We might not all like radio and TV programs, but now there is increasing evidence to support alarm from a different perspective.

Recently, nurses taking the temperature of a patient in an Arlington, Virginia, hospital noted a reading of 108 degrees on their electronic thermometer--truly a life-threatening level. The patient's temperature was then taken with a glass thermometer and it was normal.

EPA officials examining the room found electromagnetic field strengths several times higher than usual; this was probably not hazardous to the patient, but it certainly raised Cain with the equipment!

FM broadcasters seem to be the primary villains in 90% of the reported cases. In one case, signal captured by the metallic superstructure of an adjacent building were so strong that a cable attached to the top of the building produced enough current at the ground to melt a penny!

There are biological, mostly thermal (heating), effects on the human body. The safe level as established by the American National Standards Institute (ANSI) is under 1000 microwatts per square centimeter in the case of non-ionizing radiation (radio waves).

The International Radiation Protection Association has proposed to the Environmental Protection Agency (EPA) that this be reduced to 200 microwatts per square centimeter.

BOGUS LICENSES ISSUED BY FORMER FCC OFFICIAL

The Federal Communications Commission is attempting to reconstruct the actions of a former official which has led to a wide variety of bogus authorizations including new stations being allowed on the air that the Commission didn't even know about.

According to FCC officials, it appears that former FCC attorney Clifford Bond issued licenses, permits and approvals for eight years after he had left the employ of the Commission.

Fortunately, most applications for action were legitimately submitted and would have been authorized. The FCC is presently issuing such authorizations correctly and has brought charges against Bond.

INFORMATION PLEASE

Monitoring Times will print at no charge (as space permits) announcements and questions of a non-commercial service nature.

WANTED: Frequencies used by ATF, FBI, Gov. in areas of Abingdon and Bristol, Virginia, or other communities in S.W. Virginia area. We'll trade for a list of frequencies in same area. Contact Don Powers, Rt. 05, Box 544, Coeburn, VA 24230.

>>>>><<<<<

Has anyone converted the AN/URC-68 38-42 MHz and 230-250 MHz to 2 meters? Does anyone have the manual for the AN/URC-68? Kevin Neal, Route A, Box 221A, Flippin, Arkansas 72634.

>>>>><<<<<

GROVE ENTERPRISES
P.O. Box 98
BRASSTOWN, NC 28902

Address Correction Requested

BULK RATE
POSTAGE PAID
GROVE ENTERPRISES
PERMIT No. 4
BRASSTOWN, N.C.
28902

GOODMAN, DAVID J. * 1/ 1/86
31870 HIRAM TRAIL
MORELAND HILLS OH 44022

SUBSCRIBERS: SEE LABEL FOR EXPIRATION DATE

www.americanradiohistory.com