FEEDBACK

The OFFICIAL Newsletter of the

Georgian Bay Amateur Radio Club Inc.

VE3OSR 146.940 -

Oct 1997

***GBARC Meetings*:**
4th Tuesday of each month except July and August at the Georgian Yacht Club 7:30 P.M.

Breakfast Meetings:
2nd and last Saturday of each month at the ROCKFORD ESSO 9:00 AM.
1st Tuesday of every month is technical night

Information: Write to GBARC Box 113, Owen Sound, N4K5P1
Packet is found on 145.630 under the call of VE3IJD

From the editor

Hi to all the club members. The weekend of the 18th and 19th of Oct was the Jamboree On The Air (JOTA) . The club was ask to supply and operate radio equipment for the boy scouts from Wiarton and Owen Sound. In all about 45 Scouts took part and 8 girl Guides. This year was another success thanks to all the volunteers.

Friday afternoon set-up was done with the help or VE3XOX, VA3CJM, VE3IOD, and VA3JRF. Three antennas where set up. An 80 metre half wave dipole stretched from the 60 foot light standard to the back of the building, a 40 metro quarter wave vertical erected in front of the building , and a 20 metre half wave dipole extended from the front of the building to the light standard. All the coax was run into the building through the windows.

Radios were set up early Saturday morning by VE3XOX and VA3JRF. We had one computer with geoclock and another with satellite tracking running. operators for the day were VE3MWU, VA3STS, VA3 CJM, VA3ACI, VA3MJL, VE3ENS, VE3XOX, VA3JRF, and VE3IJD. Radios were manned from 12:00 hrs until 23:30 hrs Saturday.

Sunday operators were VE3IJD, VE3ENS,VA3MJL, and VA3JRF. Radios were manned from 06:30 hrs until 12:00 hrs.

Many contacts were made on HF including VE3WBS, (the Boy Scouts of Canada from Winsor) and some local call were made on two metres. The phone patch on VE3XTX(146.730) was a huge drawing card.

VA3JRF John

Secretary's Report
Kim Styan VE3DXE

Minutes for September

Meeting was called to order at 7:33pm by president Bob VE3XOX

There were 21 Members attended and no guest.

There were no minutes from Junes meeting to be read.

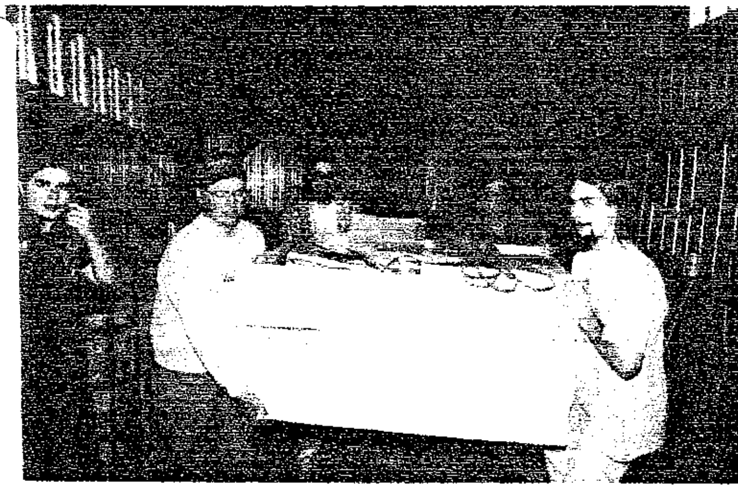
Treasure's Report: Jim VE3CJM reported that the balance of the account was $2581.00 with no out standing cheques. Insurance is coming due November 17 for the sum of $405.00. Membership are due in December.

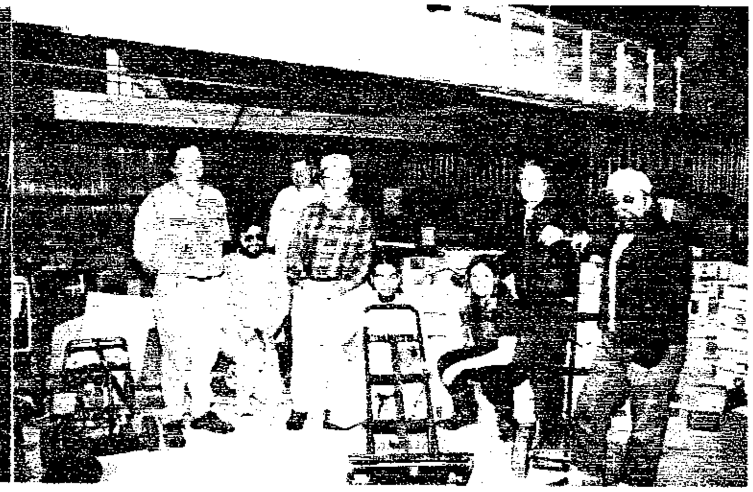
Old Business: The Terry Fox run, which was held September 14 . Kim VE3DXE read a letter that the club received from Monica Granger, thanking all the club member for there help in providing communications services for the event.
Also congratulations goes to Gene VE3IJD for getting involved with the race and finishing at the top.
Hobby Market, Kim VE3DXE read a letter that the club received from Bill Loucks VE3AR Chairman, Amateur Radio Program, thanking the club for our donation of $2730.00 . Our donation was by far the largest amount any club has ever made to the Amateur Radio Program. Last year we donated $802.17 which was the largest single donation of that year. Bill Loucks would like to submit an article to the " TCA" on our actions for raising the $2730.00.
The letter congratulated the auctioneer Paul Blais for his contribution.
The club would like to thank all the members that donated there time and effort to make the Hobby Market so successful. A speacial thank you goes out to Tom VE3TSA for all his hard work.
Wiarton Airport Club Station, the club has decided not to persue the airport facility, the promotional committee at the airport has been slow at making any decisions.

New Business: Jota will be held October 17-19, at the Wiarton Airport. Need about 5-6 members to help out. Some from the Port Elgin Club might help out as well. Brad VE3RHJ will let us use his rig.
RAC membership fee is $78.00. Bob VE3XOX put forward the motion for the club to join RAC Joe VA3JNA second it.
Hamfest- Newmarket Saturday November 8 at the Markham fairgrounds. Doors open at 9:00am Admission: $5.00 Talk in 145.350 (VE3YRA)
RAC election coming up deadline for ballots no later than noon, Friday November 21,1997.
Christmas Dinner, it was decided to have the dinner at the Marine View Restaurant. Jack VE3TWK called and made reservations on Tuesday December 16 at 7:00pm. Cost of the Buffet is $10.95 per person (drinks and coffee extra). There will be a social hour at the Yacht Club at 6:00 p.m.. Bring your spouse with you.

Amateur of the Year Award, start thinking on who you would like to see become Amateur of the Year. November will be the time to vote. Award will be presented at the Christmas Dinner.
Changes in the Repeater, as mentioned a second repeater maybe installed in Woodford to help improve the coverage area.
Amateur Radio Course, Brad VE3RHJ will instruct another course. It will be 5 weeks long, every Saturday starting on November 1, at the Yacht Club. Jim VE3CJM will check and see if it is all right a donation to the Yacht Club should be made for the extra use of the facilities.
Next month will be a short meeting and for the second half there will be a Fox hunt, weather permitting.
A motion to close the GBARC meeting was moved by John VE3TXB and second by Brad VE3RHJ. The winner of the 50/50 draw was Gene VE3IJD ($18.00). Congratulations Gene.

Hope to see you all at the next meeting 73's Kim VE3DXE.





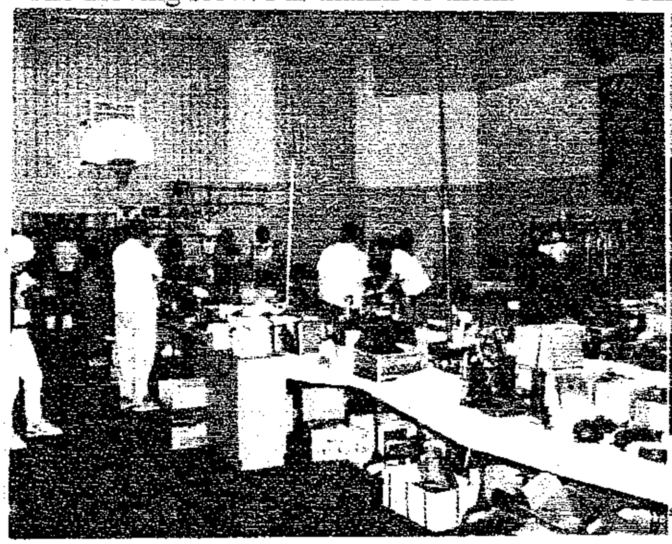
moving day, watch the breakables

what a haul

a rare photo the of the man behind the pictures

Well gang, now youv'e got to unload it

The moving crew.Our thanks to them. Admissions free, please pay at the door



Many thanks to our multitude of volunteers

Our meetings, thanks to the Georgian Yacht Club

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***   Issue number 0020   ***
***   This file was last updated Saturday November 23, 1996   ***
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*** Call   What Frequency Speed Qth   Info   ***
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VE3KYZ-1 NODE 10.145 (300) Hamilton HF day link to NS.
VA3RWP NODE (300) Maryhill Breslau, hf mail
forwarding through VA3SED
or directly to VA3RWP via
VE3KSR node stack.
VA3RWP NODE 10.147 (300) Maryhill Day/night: SE/E USA
VA3RWP NODE 10.098 (300) Maryhill DAY only: All NA, OC, EU
VA3RWP NODE 10.109 (300) Maryhill Night only:
All NA, SA, OC, EU
VA3RWP-7 NODE (192) Maryhill backbone through
VE3KSR-10 / uhf link
with VA3SED for local mail
forwarding.
VE3INF BBS Mississauga S.O.P.R.A. mail system.
VE3DTV-3 NODE Hamilton VE3DTV.#SCON.ON.CAN.NOAM
VE3TPG-10 NODE (192)
VE3USH-14 NODE (192)
VE3XOX-10 NODE (192) Woodford high speed 440 link to
VE3LSR.
VE3XPG-10 NODE (192)
VE3CDX-10 NODE (192) PORTS: 1 HS / 2 Internet
VE3RPI-14 NODE (192) Toronto FN03HP LINK TO VE3SBX-2
VE3RPI-14 NODE (192) Toronto FN03HP LINK TO VE3ULR-10
VE3RPI 144.310
VE3MRM NODE 144.310 (12)
VE3RZR-7 NODE 144.310 (12)
VE3RPI-14 NODE 144.310 (12) Toronto FN03HP Ryeham Radio Club
VE3OSC APRS 144.390 (12) Ontario Science Center beacon
VE3VRW APRS 144.390 (12) Scarborough Weather Station U-2000
VE3YUF-5 APRS 144.390 (12) St. Catharines digi
VE3YYZ APRS 144.390 (12) Toronto Wide area digi
VE3RPT APRS 144.390 (12) Uxbridge Wide area digi Yagi N/W
VE3YAP APRS 144.390 (12) West Toronto Wide area digi
K2SLZ-5 APRS 144.390 (12) Western NY Weather Station Remote
KE2VW APRS 144.390 (12) Western NY Weather Station U-2000
KF2WM APRS 144.390 (12) Lockport NY Niagara County Weather
Station / U-II (auto)
VE3SBX NODE 147.435 (12)
VE3OY-4 NODE 144.490
VE3SBX-7 NODE 144.900 (12)
VE3XPG NODE 144.910 (12)
VE3YRA BBS 144.930 (12) Keswick Port 3 on system
VE3RNP NODE 144.950 (12) Niagara Packet User's Group
VE3TLN BBS 144.950 (12) Welland
VE3USH NODE 144.970 (12)
VA3KS BBS 144.970 (12) Almonte/Carp TCP/IP
VE3OSQ-4 NODE 144.970 (12) Almonte/Carp
VA3VW BBS 144.970 (12) Thorold (VA3VW.#NIAG.ON.CAN.NA).
VE3DAX 144.990 (12) Toronto
VE3POL 144.990 (12) Toronto
VE3ZK BBS 144.990 (12) Grand Bend Forwards to VE3KSQ,VE3UWO
VE3RUN, VE3OVV.
VE3ZK-7 NODE 144.990 (12) Grand Bend
N2NJH-5 BBS 144.990 (12) N2NJH.#WNY.NY.USA.NOAM
VE3KSR NODE 145.010 (12) Baden W.W.P.U.G.
VE3TDS NODE 145.010 (12) Bramalea FN03GK.
VA3HTM BBS 145.010 (12) VA3HTM.#NE.ON.CAN.NOAM
VA3HTM-3 NODE 145.010 (12)
VE3NBC NODE 145.010 (12) North Bay
VE3KOI BBS 145.010 (12) North Bay
VE3ONE BBS 145.010 (12) Sudbury
VA3BUS BBS 145.010 (12) Sudbury
VA3BUS-7 NODE 145.010 (12) Sudbury
VE3RQQ NODE 145.010 (12) Little Current
VA3SEN NODE 145.010 (12) Blind River
VE3UCR NODE 145.010 (12) Foymount Renfrew County Amateur
Radio club
Upper Ottawa Valley
VE3EAR NODE 145.010 (12) Goderich G8BPQ Packet switch and
link to VE3EAR-2 NOS
44.135.81.1 EN93DR
VE3WWD NODE 145.010 (12) Whitechurch TheNet X1J2 with IP
router for TCP/IP
44.135.81.28
VA3TOP NODE 145.010 (12) Elliot lake EN86 SPBBS

VA3GTH BBS 145.010 (12) Elliot lake Mail rout/fwd.
VE3MMN-7 NODE 145.010 (12) Burford Ports to MMN-5
VE3OVV BBS 145.010 (12) Kincardine
VE3MUS-1 NODE 145.010 (12) Dwight Muskoka LAN: Node-op VE3KR
Muskoka Fm Club.
VE3KER NODE 145.010 (12) Kingston NET LINK TO THE EAST
VE3TPG NODE 145.030 (12) North York
VE3LNZ NODE 145.050 (12) Lindsay VHARA. BBS at VE3KPG-1
VE3KYZ-1 NODE 145.050 (12) Hamilton Link to Internet/Amprnet
9600 baud. SMPT.
VE3KYO NODE 145.050 (12) Dunnville
VE3LSR NODE 145.070 (12) Barrie Packet Switch (FN04)
VE3UWO BBS 145.070 (12) London Qth is Lucan
VE3WMW-1 NODE 145.070 (12) London alias is Mocha1
VE3CDY BBS 145.070 (12) Kingston BBS
VE3KER-7 NODE 145.070 (12) Kingston NETWORK GATEWAY
VA3SED BBS 145.090 (12) Baden Serving Waterloo Region
VE3LRS-1 NODE 145.090 (12) Shetland Chatham-Kent ARC
VE3RUN BBS 145.090 (12) Sheltand Chatham-Kent ARC
VE3KWQ NODE 145.090 (12) Waterloo
VE3PPA BBS 145.090 (12) Norwich Run by VE3PAL
VE3PPA-2 NODE 145.090 (12) Norwich Run by VE3PAL
VE3RCB TCP/IP145.550 (12) Hamilton REDHAM -Emergency station
for ARES Red Cross Hamilton
Occasional use only.
VE3PKG NODE 145.610 (12) Halton Hills
VA3BUS BBS 145.610 (12) Sudbury
VA3LUG-0 GATE 145.610 (12) Sudbury
VA3BUS-7 NODE 145.610 (12) Sudbury
VE3IJD BBS 145.630 (12) Keady OwenSound area 50 mile
radius. Satellite links
to Ottawa,Calgary &
Winnipeg, radio links
to Barrie.
VE3IJD-7 NODE 145.630 (12) Keady Connects to bbs/links
VE3PKO NODE 145.630 (12) Ballantrae
VE3USG NODE 145.630 (12) Keady See Ve3usg 440.050
VE3DTV BBS 145.650 (12) Hamilton FN03BF
VE3DTV BBS 145.650 (12) Hamilton VE3DTV.#SCON.ON.CAN.NOAM
VA3EEE BBS 145.650 (12) Pembroke FN15KL
VA3EEE-4 NODE 145.650 (12) Pembroke
VE3CDX DXC 145.670 (12)
VE3HHZ BBS 145.670 (12) Orillia IPBBS
VE3EPG NODE 145.690 (12) Cobourg
VA3SME BBS 145.690 (12) Simcoe Run by Norfolk Club
VE3MMN-7 NODE 145.690 (12) Burford Ports to above
VE3WAT-7 NODE 145.690 (12) Delhi
VE3KUK BBS 145.690 (12) Langton
VE3PPA BBS 145.690 (12) Norwich
VE3FJB DXC 145.710 (12)
VE3FJB-1 BBS 145.710 (12)
VE3LSR NODE 145.710 (12) Barrie Packet Switch (FN04)
VA3BBS BBS 145.730 (12) Toronto
VE3ZRD BBS 145.750 (12)
VA3TMC BBS 145.770 (12) Milton Milton Radio Club.
VE3JNR BBS 145.770 (12) Selkirk Run by CARP
VE3JNR-7 NODE 145.770 (12) Selkirk uhf link / milton
uhf link / va3sme simcoe
VE3PBI-7 NODE 145.770 (12) St.Catherines Digi / Va3mtc / Ve3jnr
VA3TMC-3 NODE 145.770 (12) HS 9K6 backbone link
to VE3DTV-10
VE3ZDA-7 NODE 145.770 (12) 300 baud HF link to
Eastern Canada
VE3ZRB DXC 145.770 (12)
VE3SNP BBS 145.790 (12) PortColborne FN02IV NIAGARA SO. CLUB
VE3SSF NODE 147.480 (12) Peterborough Sir Sandford Fleming
Community College
Internet wormhole
VE3ULR NODE 147.480 (12) Aurora,
VE3MMN-5 NODE 147.480 (12) Burford Ports to MMN-7
VE3MUS NODE 147.510 (12) Dwight Muskoka LAN: Node-op VE3KR
Muskoka Fm Club.
VE3YRA NODE 147.510 (12) Keswick Port 4
VE3YRA NODE 147.510 (96) Keswick Port 5
VE3VLL NODE 147.570 (12) Orangeville
VE3YRA-3 NODE 223.800 (96) Keswick Port 1
VE3STW NODE 223.400 (12) Goderich Forwarding link between
VE3OVV / VE3ZK EN93DR
VE3ZK BBS 223.400 (12) Grand Bend
VE3ZK-7 NODE 223.400 (12) Grand Bend
VE3IJD-8 NODE 430.550 (12) Keady Radio link to VE3XOX-8
located in Woodford.

					IDJ node hop towards Barrie and Beyond.
VE3XOX-8	NODE	430.550	(12)		Radio is hard wired to VE3XOX-9.
VE3KER-1	NODE	434.050	(48)	Kingston	NET LINK TO BBSCDY
VE3LSR	NODE	440.025	(12)	Barrie	Packet Switch (FN04)
VE3IJD-7	NODE	440.050	(12)	Keady	Bbs/links.If using 440.050 you can connect to VE3USG located at Telesat. Allan Park, near Hanover.
VE3USG	Node	440.050	(12)	Keady	Forwarding mail towards satellite. Routes to VE6YYC, VE3NAV, VE4KV.
VE3TPG-1	NODE	441.000	(12)	North York	
VE3KYZ-1	NODE	441.000	(12)	Hamilton	Link to ve3tpg-1/tor440
VA3EEE	BBS	441.025	(12)	Pembroke	FN15KL
VA3EEE-4	NODE	441.025	(12)	Pembroke	
VE3UCR-1	NODE	441.025	(12)	Foymount	Renfrew County Amateur Radio Club Upper Ottawa Valley
VE3RZR-2	NODE	441.100	(96)	Toronto	METRO2
VA3BUS-7	NODE	441.000	(12)	Sudbury	
VE3ZRD	BBS	441.250	(96)		
VE3KER-4	NODE	444.850	(96)	Kingston	NET LINK TO NORTH JNOS
VE3KER-6	ROUTER	444.850	(96)	Kingston	JNOS ON MATRIX AND UHF
VE3KER-2	NODE	445.100	(12)	Kingston	NET LINK TO WATERTOWN NY
VE3DTV	BBS	445.875	(12)	Hamilton	VE3DTV.#SCON.ON.CAN.NOAM
VE3LSR	NODE	445.950	(12)	Barrie	Packet Switch (FN04)
VE3XOX-9	NODE	445.950	(12)		Links to VE3LSR Barrie.
VE3YRA-3	NODE	445.950	(12)	Keswick	Port 2
VE3YRA-3	NODE	445.950	(96)	Keswick	Port 2
VE3RPI		446.775			
VE3RPI-14	NODE	446.775	(96)	Toronto	FN03HP
VE3KER-14	NODE	446.800	(12)	Kingston	NET LINK TO BELLEVILLE
VE3XPG-1	NODE	446.900	(12)		
xxxxxx-1	xxxx	999.999	(xx)	xxxxxxx	End of file.

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*** Please send all updates or additions to Va3hsc at Va3bbs. ***
*** Please send in the form of: ***
*** Call What Frequency Speed Qth Info ***
*** V?3??? ???? ???.??? (??) ???????? ???????????????? ***

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*** Issue number 0020 ***
*** This file was last updated Saturday November 23, 1996 ***

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Rac Hf Bandplan Review

Radio Amateurs Canada has decided to review that nations High Frequency bandplan. This, following proposals emanating from the U.S Amateur community which the Canadians say will impact their current band usage.

According to Ken Pyke, VE3OGM, the objective that Radio Amateurs Canada has in mind is to formulate a comprehensive and workable HF Band Plan for Canadian Amateurs which takes into consideration Region 1 and 3 HF Band usage. Pyke says that The Radio Amateurs Canada High Frequency Band Plan Committee is looking for committee members, hopefully two from each Region, who would be willing to help evaluate input from all HF interest groups including SSB, CW, AM, Digital and slow scan amateur TV. Pyke adds that Radio Amateurs Canada will be looking for this input from the overall Canadian ham community as soon as they have the committee members in place. (Via Radio Amateurs Canada)

Radio, system of communication employing electromagnetic waves propagated through space. Because of their varying characteristics, radio waves of different lengths are employed for different purposes and are usually identified by their frequency. The shortest waves have the highest frequency, or number of cycles per second; the longest waves have the lowest frequency, or fewest cycles per second. In honor of the German radio pioneer Heinrich Hertz, his name has been given to the cycle per second (hertz, Hz); 1 kilohertz (kHz) is 1000 cycles per sec, 1 megahertz (MHz) is 1 million cycles per sec, and 1 gigahertz (GHz) is 1 billion cycles per sec. Radio waves range from a few kilohertz to several gigahertz. Waves of visible light are much shorter. In a vacuum, all electromagnetic waves travel at a uniform speed of about 300,000 km (about 186,000 mi) per second. Radio waves are used not only in radiobroadcasting but in wireless telegraphy, telephone transmission, television, radar, navigational systems, and space communication. In the atmosphere, the physical characteristics of the air cause slight variations in velocity, which are sources of error in such radio-communications systems as radar. Also, storms or electrical disturbances produce anomalous phenomena in the propagation of radio waves.

Because electromagnetic waves in a uniform atmosphere travel in straight lines and because the earth's surface is approximately spherical, long-distance radio communication is made possible by the reflection of radio waves from the ionosphere. Radio waves shorter than about 10 m (about 33 ft) in wavelength—designated as very high, ultrahigh, and superhigh frequencies (VHF, UHF, and SHF)—are usually not reflected by the ionosphere; thus, in normal practice, such very short waves are received only within line-of-sight distances. Wavelengths shorter than a few centimeters are absorbed by water droplets or clouds; those shorter than 1.5 cm (0.6 in) may be absorbed selectively by the water vapor present in a clear atmosphere.

A typical radio-communication system has two main components, a transmitter and a receiver. The transmitter generates electrical oscillations at a radio frequency called the carrier frequency. Either the amplitude or the frequency itself may be modulated to vary the carrier wave. An amplitude-modulated signal consists of the carrier frequency plus two sidebands resulting from the modulation. Frequency modulation produces more than one pair of sidebands for each modulation frequency. These produce the complex variations that emerge as speech or other sound in radiobroadcasting, and in the alterations of light and darkness in television broadcasting.

Transmitter

Essential components of a radio transmitter include an oscillation generator for converting commercial electric power into oscillations of a predetermined radio frequency; amplifiers for increasing the intensity of these oscillations while retaining the desired frequency; and a transducer for converting the information to be transmitted into a varying electrical voltage proportional to each successive instantaneous intensity. For sound transmission a microphone is the transducer; for picture transmission the transducer is a photoelectric device.

Other important components of the radio transmitter are the modulator, which uses these proportionate voltages to control the variations in the oscillation intensity or the instantaneous frequency of the carrier, and the antenna, which radiates a similarly modulated carrier wave. Every antenna has some directional properties, that is, it radiates more energy in some directions than in others, but the antenna can be modified so that the radiation pattern varies from a comparatively narrow beam to a comparatively even distribution in all directions; the latter type of radiation is employed in broadcasting.

The particular method of designing and arranging the various components depends on the effects desired. The principal criteria of a radio in a commercial or military airplane, for example, are light weight and intelligibility; cost is a secondary consideration, and fidelity of reproduction is entirely unimportant. In a commercial broadcasting station, on the other hand, size and weight are of comparatively little importance; cost is of some importance; and fidelity is of the utmost importance, particularly for FM stations; rigid control of frequency is an absolute necessity. In the U.S., for example, a typical commercial station broadcasting on 1000 kHz is assigned a bandwidth of 10 kHz by the Federal Communications Commission, but this width may be used only for modulation; the carrier frequency itself must be kept precisely at 1000 kHz, for a deviation of one-hundredth of 1 percent would cause serious interference with even distant stations on the same frequency.

Oscillators

In a typical commercial broadcasting station the carrier frequency is generated by a carefully controlled quartz-crystal oscillator. The fundamental method of controlling frequencies in most radio work is by means of tank circuits, or tuned circuits, that have specific values of inductance and capacitance, and that therefore favor the production of alternating currents of a particular frequency and discourage the flow of currents of other frequencies . In cases where the frequency must be extremely stable, however, a quartz crystal with a definite natural frequency of electrical oscillation is used to stabilize the oscillations . The oscillations are actually generated at low power by an electron tube and are amplified in a series of power amplifiers that act as buffers to prevent interaction of the oscillator with the other components of the transmitter, because such interaction would alter the frequency. The crystal is shaped accurately to the dimensions required to give the desired frequency, which may then be modified slightly by adding a condenser to the circuit to give the exact frequency desired. In a well-designed circuit, such an oscillator does not vary by more than one-hundredth of 1 percent in frequency. Mounting the crystal in a vacuum at constant temperature and stabilizing the supply voltages may produce a frequency stability approaching one-millionth of 1 percent. Crystal oscillators are most useful in the ranges termed very low frequency, low frequency, and medium frequency (VLF, LF, and MF). When frequencies higher than about 10 MHz must be generated, the master oscillator is designed to generate a medium frequency, which is then doubled as often as necessary in special electronic circuits. In cases where rigid frequency control is not required, tuned circuits may be used with conventional electron tubes to generate oscillations up to about 1000 MHz, and reflex klystrons are used to generate the higher frequencies up to 30,000 MHz. Magnetrons are substituted for klystrons when even larger amounts of power must be generated.

Modulation

Modulation of the carrier wave so that it may carry impulses is performed either at low level or high level. In the former case the audio-frequency signal from the microphone, with little or no amplification, is used to modulate the output of the oscillator, and the modulated carrier frequency is then amplified before it is passed to the antenna; in the latter case the radio-frequency oscillations and the audio-frequency signal are independently amplified, and modulation takes place immediately before the oscillations are passed to the antenna. The signal may be impressed on the carrier either by frequency modulation (FM) or amplitude modulation (AM).

The simplest form of modulation is keying, interrupting the carrier wave at intervals with a key or switch used to form the dots and dashes in continuous-wave radiotelegraphy.

The carrier wave may also be modulated by varying the amplitude, or strength, of the wave in accordance with the variations of frequency and intensity of a sound signal, such as a musical note. This form of modulation, AM, is used in many radiotelephony services including standard radio broadcasts. AM is also employed for carrier current telephony, in which the modulated carrier is transmitted by wire, and in the transmission of still pictures by wire or radio. *See* Broadcasting, Radio and Television.

In FM the frequency of the carrier wave is varied within a fixed range at a rate corresponding to the frequency of a sound signal. This form of modulation, perfected in the 1930s, has the advantage of yielding signals relatively free from noise and interference arising from such sources as automobile-ignition systems and thunderstorms, which seriously affect AM signals. As a result, FM broadcasting is done on high-frequency bands (88 to 108 MHz), which are suitable for broad signals but have a limited reception range.

Carrier waves can also be modulated by varying the phase of the carrier in accordance with the amplitude of the signal. Phase modulation, however, has generally been limited to special equipment.

The development of the technique of transmitting continuous waves in short bursts or pulses of extremely high power introduced the possibility of yet another form of modulation, pulse-time modulation, in which the spacing of the pulses is varied in accordance with the signal.

The information carried by a modulated wave is restored to its original form by a reverse process called demodulation or detection. Radio waves broadcast at low and medium frequencies are amplitude modulated. At higher frequencies both AM and FM are in use; in present-day commercial television, for example, the sound may be carried by FM, while the picture is carried by AM. In the superhigh-frequency range (above the ultrahigh-frequency range), in which broader bandwidths are available, the picture also may be carried by FM. Experiments have also been conducted in which sound as well as pictures are transmitted digitally at these high frequencies. Such transmissions may some day replace current analog broadcasting techniques.

Antennas

The antenna of a transmitter need not be close to the transmitter itself. Commercial broadcasting at medium frequencies generally requires a very large antenna, which is best located at an isolated point far from cities, whereas the broadcasting studio is usually in the heart of the city. FM, television, and other very-high-frequency broadcasts must have very high antennas if appreciably long range is to be achieved, and it may not be convenient to locate such a high antenna near the broadcasting studio. In all such cases, the signals may be transmitted by wires. Ordinary telephone lines are satisfactory for most commercial radiobroadcasts; if high fidelity or very high frequencies are required, coaxial cables are used.

Receivers

The essential components of a radio receiver are an antenna for receiving the electromagnetic waves and converting them into electrical oscillations, amplifiers for increasing the intensity of these oscillations, detection equipment for demodulating, a speaker for converting the impulses into sound waves audible by the human ear (and in television a picture tube for converting the signal into visible light waves), and, in most radio receivers, oscillators to generate radio-frequency waves that can be "mixed" with the incoming waves.

The incoming signal from the antenna, consisting of a radio-frequency carrier oscillation modulated by an audio-frequency or video-frequency signal containing the impulses, is generally very weak. The sensitivity of some modern radio receivers is so great that if the antenna signal can produce an alternating current involving the motion of only a few hundred electrons, this signal can be detected and amplified to produce an intelligible sound from the speaker. Most radio receivers can operate quite well with an input from the antenna of a few millionths of a volt. The dominant consideration in receiver design, however, is that very weak desired signals cannot be made useful by amplifying indiscriminately both the desired signal and undesired radio noise. Thus, the main task of the designer is to assure preferential reception of the desired signal.

Most modern radio receivers are of the superheterodyne type in which an oscillator generates a radio-frequency wave that is mixed with the incoming wave, thereby producing a radio-frequency wave of lower frequency; the latter is called intermediate frequency. To tune the receiver to different frequencies, the frequency of the oscillations is changed, but the intermediate frequency always remains the same (at 455 kHz for most AM receivers and at 10.7 MHz for most FM receivers). The oscillator is tuned by altering the capacity of the capacitor in its tank circuit; the antenna circuit is similarly tuned by a capacitor in its circuit. One or more stages of intermediate-frequency amplification are included in all receivers; in addition, one or more stages of radio-frequency amplification may be included. Auxiliary circuits such as automatic volume control (which operates by rectifying part of the output of one amplification circuit and feeding it back to the control element of the same circuit or of an earlier one) are usually included in the intermediate-frequency stage. The detector, often called the second detector, the mixer being called the first detector, is usually simply a diode acting as a rectifier, and produces an audio-frequency signal. FM waves are demodulated or detected by circuits known as discriminators or radio-detectors that translate the varying frequencies into varying signal amplitudes.

Amplifiers

Radio-frequency and intermediate-frequency amplifiers are voltage amplifiers, increasing the voltage of the signal. Radio receivers may also have one or more stages of audio-frequency voltage amplification. In addition, the last stage before the speaker must be a stage of power amplification. A high-fidelity receiver contains both the tuner and amplifier circuits of a radio. Alternatively, a high-fidelity radio may consist of a separate audio amplifier and a separate radio tuner.

The principal characteristics of a good radio receiver are high sensitivity, selectivity, fidelity, and low noise. Sensitivity is primarily achieved by having numerous stages of amplification and high amplification factors, but high amplification is useless unless reasonable fidelity and low noise can be obtained. The most sensitive receivers have one stage of tuned radio-frequency amplification. Selectivity is the ability of the receiver to obtain signals from one station and reject signals from another station operating on a nearby frequency. Excessive selectivity is not desirable, because a bandwidth of many kilohertz is necessary in order to receive the high-frequency components of the audio-frequency signals. A good broadcast-band receiver tuned to one station has a zero response to a station 20 kHz away. The selectivity depends principally on the circuits in the intermediate-frequency stage.

High-Fidelity Systems

Fidelity is the equality of response of the receiver to various audio-frequency signals modulated on the carrier. Extremely high fidelity, which means a flat frequency response (equal amplification of all audio frequencies) over the entire audible range from about 20 Hz to 20 kHz, is extremely difficult to obtain. A high-fidelity system is no stronger than its weakest link, and the links include not only all the circuits in the receiver, but also the speaker, the acoustic properties (*see* Acoustics) of the room in which the speaker is located, and the transmitter to which the receiver is tuned. Most AM radio stations do not reproduce faithfully sounds below 100 Hz or above 5 kHz; FM stations generally have a frequency range of 50 Hz to 15 kHz, the upper limit being set by Federal Communications Commission regulations.

Distortion

A form of amplitude distortion is often introduced to a radio transmission by increasing the relative intensity of the higher audio frequencies. At the receiver, a corresponding amount of high-frequency attenuation is applied. The net effect of these two forms of distortion is a net reduction in high-frequency background noise or static at the receiver. Many receivers are also equipped with user-adjustable tone controls so that the amplification of high and low frequencies may be adjusted to suit the listener's taste. Another source of distortion is cross modulation, the transfer of signals from one circuit to another through improper shielding. Harmonic distortion caused by nonlinear transfer of signals through amplification stages can often be significantly reduced by the use of negative-feedback circuitry that tends to cancel most of the distortion generated in such amplification stages.

Watch for part 2 next month...............

Where is the answer

: WHY IS HAM RADIO DYING??

An article form CQ VERWOERDBURG, MAY 1987

QUOTE

WHY IS HAM RADIO DYING???

There is a problem being mentioned in some analytically inclined circles of ham radio. It is causing concern to those amongst us who want ham radio to mature and grow vigorously into the future.

It is said in dismal tones that the average age of hams globally is rising up and up year after year. Now this is not due to miracles of modern medicine, and nor is the answer as simple as applying the loud end of a shotgun to the older members of our fraternity.

The sad fact is that we are recruiting too few young people - perhaps too few of all ages, and that is just another aspect of the problem.

WHY WOULD THIS BE ?

A fact that cannot be overseen is the generalized use and growth of Internet and related systems, the cheap cost, ease of operations, the fact that you don't require a license as well as the modern technological solutions to voice, image and text communications and improvements on a daily basis.

Some say that with todays prices you have to be past the age of other expensive pastimes (wine, women and song?) before you can afford the equipment. Lets face it, the potential for high cost is there, but it's like driving a car, a new Rolls Royce will cost more that a used Mazda or Ford vehicle, but either one will eliminate the need to walk.

No, I think the cause of the dilemma is of our own making. We tend to project the image of a mysterious, closed society. Sure it is good for the EGO, but is it good for the hobby? .....NO!!!!.....

When we chat to "potential hams" (i.e. any non ham), don't we tend to dazzle the poor fellow with how clever we are? To bask in the open mouthed admiration for our mastery of mysterious arts?

Perhaps if we stepped off the pedestal and showed him how easily he could join us in ham radio ... Don't laugh, it happened to me! Which just goes to prove you get some undesirables in any group.

I dare say some readers may feel affronted at my repeated use of the term "HAM", instead of the more stilted and stylized "Amateur Radio Operator". If so, then ask yourself for a honest opinion: Are you in ham radio for ham radio or for a private ego trip?

Inside our fraternity we know deep down that we all push the same buttons to provide QRM and it matters little whether some think of their activities in more dignified terms than "hamming", but to those outside it helps to make hamming seem more formidable to attain.

But even inside our fraternity we set ourselves apart, one from another in the CW qualified and NON-CW qualified caste system.

We are friends and friendly one to another, but let no mere NON-CW qualified ham walk upon the sacred ground 30MHz and below - even via a link of some sort! Oh boy... the variety of foggy reasons propounded to support the validity of the exalted status and rewards of being able to pound the key!! Actually, in real life you don't need to know Morse to make a valuable contribution to ham radio.

I find it interesting that the most modern high-tech communications are developing above 30MHz ; i.e. cellular systems, trunkings, satellite systems, multichannel carrier systems.... etc. ... Makes you think, doesn't it?

Our domain is so sacrosanct that during most of the public domain activities we support, when we have an ideal opportunity to fire the enthusiasm of many young minds, the most powerful advertising tool in our arsenal, the PTT, is denied them in our country. Countries where this is allowed. have not crumbled at their foundations as a result.

And guess which side of this fence the radio leagues sit on! No prizes - too predictable. I have wanted to be a "ham" since before I even knew the more dignified term for it. On the joy of being able to speak to those far off voices. But there were confusing noises too, dah dit dit ...... A close door keeping me out. I, like how many other, accepted my fate and left it at that.

And then a couple of years ago, Alan ZS6ADB (now silent key) said :"Why don't you get your license?" I told him of the problem I have with the mysterious dits and dahs, and he showed me another door marked "NO-CODE - have ham, but better than nothing".

I jumped at it, and within two weeks had written the exam, and three weekslater was on the air - from CB to TWO (meters)! Had it not been for Alan's effort to make it achievable, I would probablyy still have been "Polecat" pushing 4watt legal limit. Amazing where QRP on sideband will reach in the HF bands - and without a single dit or dah... -CODE'rs take note!

Our hobby, however great, is just that. Let us not delude ourselves that it is a religion, attainable only through trial by fire.

There are any number of valuable potential hams out there who may feel too intimidated to join us. Many of them just say no when hearing about the CODE

We need them to revitalize ham radio globally, to introduce progressive thinking where it counts and to combat the stagnation and lack of forward thinking so actively supported by the dit and dah mentality.

So, why IS ham radio dying? Because we are killing it! We don't allow it to change and adapt to the changed environment of the modern telecommunications and information technology worlds!

Some of us are using ham radio as a status crutch for our egos - if it is perceived as difficult or expensive, then we must be perceived as clever and/or wealthy.

We are all in it together, but some of us are considered unworthy because we do not use an outdated form of communications. Don't get me wrong, if you like it, no one wants to take it away from you, but as a status symbol in the modern world it is a little, perhaps too, dated.

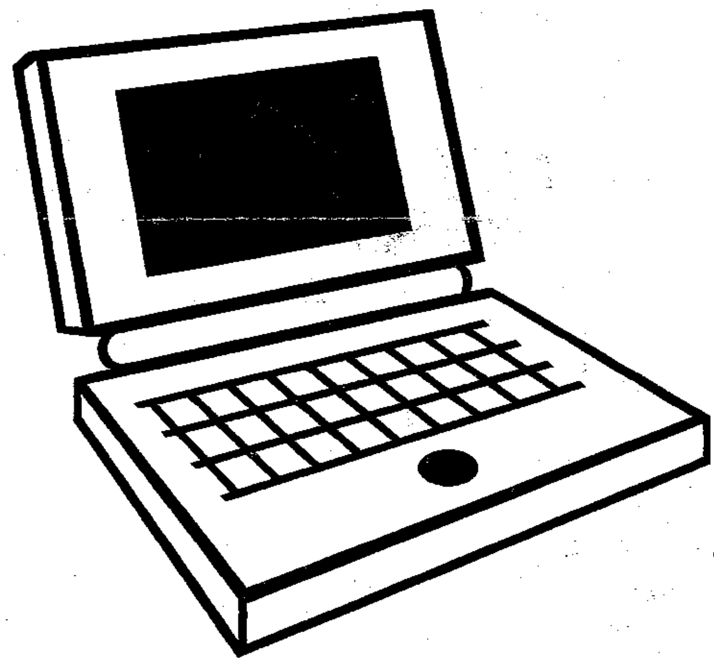
We keep a closed society and stifle it's growth.

Written in the hope of igniting some heated arguments between the stagnant and progressive elements of our wonderful fraternity.

de ZR6CC, Jimmy Smith, PO box 536, Halfway House, 1685, R.S.A.

UNQUOTE

E-mail addresses for gbarc members



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