



Newscaster

The Official Publication of the
Winnipeg Amateur Radio Club
Winnipeg Senior Citizens Radio Club

April 1997

Home Brew Night

Bring down your winter projects & win a prize

Judging by your fellow Hams

Date: **April 14, 1997**
Time: 7:30 p.m.
Place: Sturgeon Creek Regional Secondary School

Other Important Dates:

Articles: Apr 30 - May Newsletter
May 28 - June Newsletter

WARC: May 12 - Meeting
June 9 - Meeting - Election Night

WSC: April 16 - Forum Meeting @ clubhouse
Weekdays - 09:00 am - Seniors Net 147.390MHz +

ARES: April 8 - Flood Meeting
April 15 - Meeting @ MEMO boardroom

Other: April - All month - Flooding
June 16 - Marathon - see VE4YF for details
Jun 28,29 - Field Day @ Falcon Lake
July 11-13 - International HamFest

WARC: Executive for 1997			
Past President	Barrett Filbert	VE4ABA	338-2441
President	Richard Kazuk	VE4KAZ	895-4778
Treasurer	Rick Lord	VE4OV	896-0631
Secretary	Roxanne Byron	VE4ZF	388-6114
Vice-President	Jim Ross	VE4AJR	256-6366
Program	Lee Smith	VE4ANC	864-2334
Membership	Norm Coull	VE4EH	885-1692

Words from the President of WARC: by Richard, VE4KAZ

As I come in from shovelling the sidewalk the weatherman is predicting another 5 - 8 cm of snow by the end of the week. Will the snow never end? According to Manitoba Natural Resources who are predicting flooding for Winnipeg and southern Manitoba, the snow has to end sooner or later. Will the flooding be worse than last year? worse than '79? or the worst flood of the century like some are predicting? Only time will tell. For those of you who are interested in helping with communications during the flood (whatever size it is), please contact Jeff Dovyak VE4MBQ who is organizing both ARES and WARC members to assist the City.

The WARC monthly meeting for April is Home Brew Night, so fire up those soldering irons, dig out those parts and start/finish building your project, or bring an old project that you have kicking around the Shack from years gone by. We are interested in seeing everyone's projects so don't be shy!

As you are no doubt aware, one of WARC's most looked forward to events, the Spring Flea Market, is slated for April 20 at the Waverley Heights Community Club. Doors open at 10:00 a.m. - admission just one loonie.

Hope to see all of you at the April monthly meeting, as well as at the Flea Market. Remember to stay dry!

Winnipeg Senior Citizens Radio Club Released by Alf, VE4ALF (President - 96)

Here's your invitation to join us for the next Seniors' Breakfast, sponsored by the Winnipeg Seniors' Club (VE4WSC). being held this month at the Garden City Inn, McPhillips at Jefferson. DATE is Thursday, April 10th, and it starts at 9 a.m. The food is excellent and inexpensive, and we have lots of room to handle a large turnout (up to 50). Visitors and friends are welcome to join us. DATE is Thursday, April 10th. With our nice Spring weather and good driving conditions (but watch out for the potholes!), we should see many more this time around, eh?

The Club has finally got the Constitution committee in action work has started on preparing the draft for a revised and more workable constitution, as well as a new Book of Rules, which should be ready for the membership's perusal by next November. Members of this committee are: Adam, 4SN; Paul, 4OPC; Gil, 4AG; Tom, 4TSM. If any members want to have some input (your ideas and comments are welcome), please leave them in written form, attention any of the committee members.

The next Board meeting is slated for Wednesday, April 16th, followed in the afternoon by the Forum meeting, to which ALL club members are invited to attend. This is a time for socializing, whetted by a short program that is of interest to all (not necessarily on the subject of ham radio). Try and come to these meetings... it shows your interest in Club activities. Remember, if you are joining or renewing your membership in RAC, please mark on your application WIN 100, our affiliation number, so that the Club gains a small fee. Also, if you haven't as yet made your contribution for 1997 (tax deductible receipt is available), please do so now. Gladys, 4GLA, our treasurer, welcomes all donations, no matter how small. The Club's budget has been completed - members can view it upon request.

Gil is now on the Internet: if you have anything for "Sparks", you can now send it to him at gilfred@pangea.ca Some members took part in the Museum week at Polo Park, handling the display table set up by M.A.R.M. (Manitoba Amateur Radio Museum, of Austin), and selling memberships. From all accounts, it was well received by the general populace, generating a lot of interest.

The renovations at the clubrooms continue to make good progress. The hardest working two are Abe, 4ZI and John, 4CCW, who have the tough job of completely redoing the workshop. It's looking good so far, fellows. The next project will be the painting of the entire premises - got a spare paintbrush?

The Seniors' Net, weekdays at 9 a.m. on VE4WPG continues to attract check-ins. In fact, lately there has been up to 35 during net, almost reaching the all-time high of 36. Tune in if you can - and check in if at all possible - let's hit a new high. And the Totally Lost & Confused Net (147.480S each night beginning at 9 p.m.) still attracts a goodly number too. If you want to exercise your brain, this is the Net to join.

We hear that Keith, 4BC is becoming very active now during his stay in Riverview (Princess Elizabeth) - he wheels that wheelchair around with gusto! And the new full address for Al Schroeder, 4AMS is: River East Personal Care Home (Ward B2), 1375 Molson Ave. ph. 661-1346. Nice to hear Vic, 4VIC on the nets during his (and his xyl's) visit to Winnipeg.

ARES Committee Report **by Jeff, VE4MBQ - Winnipeg EC**

Our MARCH monthly meeting featured two speakers from Mennonite Disaster Service who came to tell us about MDS. Turnout at the meeting was excellent. We welcome Ed Richardson VE4EAR as a new member. During the business meeting the members approved the proposal the WARES membership be open to licensed Canadian amateurs eighteen years of age or older. Our prime concern is our liability in dispatching a minor on an emergency call-out without specific approval from parents or guardian.

Our APRIL meeting is scheduled for TUESDAY 15 APRIL at the EMO Boardroom 15th floor 405 Broadway. MEMO Director of Education Larry Gwiazda will be telling us about MEMO's role and the powers afforded to a local government declaring a local state of emergency. This meeting is for ARES members ONLY. Please monitor VE4WPG at 6 PM 15 APRIL for possible meeting cancellation or location change in case the MEMO Boardroom has an operation in progress.

Due to the possibility of WARES involvement with communications support for the City during flood control operations I am NOT booking any scheduled public service communication events for April or early May. WARES will once again be providing amateur communications for Team Handball National Championship 16,17 18 MAY and 23,24,25 MAY.

A brief information report on flood communications can be found elsewhere in this Newscaster issue

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MINUTES for W.A.R.C. March 10, 1997

Submitted by Roxanne, VE4ZF

Meeting called to order, Richard VE4KAZ at 7:37 p.m.

Moved by VE4HAY and seconded by VE4MBQ that the minutes of February 1997 are accepted as printed in The Newscaster. **Motion carried.**

There were 57 amateurs plus two guests in attendance. Introductions were made in the usual manner.

CORRESPONDENCE:

information on International Peace Gardens Ham Fest

TREASURER'S REPORT:

Rick VE4OV reported a balance of \$4907.70 as of February 28, 1997. The insurance premium of \$350.00 is due.

STANDING COMMITTEES:

FLEA MARKET:

The date is Sunday, April 20, 1997 and only 1 ½ tables left.

PROGRAM:

Lee ANC presented the upcoming program:

(1) Tonight: The 10 Commandments of Antennas by Rick Lord VE4OV

(2) April 14 is Home Brew Night. This will be an opportunity for folks to bring projects that are either completed or still in the works. These projects can be shown to others so that they can learn e.g.: a software program

MEMBERSHIP:

Norm VE4EH had nothing to report.

THE NEWSCASTER:

Derek VE4HAY looking for articles.

THE DX SLEUTHS:

Adam VE4SN reported that after sunrise 20M was good and before sunset both 20M and 40M were good. Upcoming Dxpeditions were mentioned. He noted that 701A does not count but that there would be a couple of Japanese stations there.

MALL DISPLAY:

Ed Henderson VE4YU reminded everyone the display will be on March 18-19-20 at St. Vital Centre. The Community booth has been relocated to the Wal-Mart area. He may not be able to set up an antenna so the display may be static. Those wishing to help out should see Ed at the break.

MANITOBA MARATHON:

Kay Quinn VE4YF needs 70 amateurs to assist with communication for the Sunday, June 16 Marathon.

IPG HAM FEST:

Dick reminded that we are co-hosting this year's event on July 11-12-13. It is only a four-hour drive from Winnipeg so everyone is encouraged to attend.

FIELD DAY:

The DX Sleuths are organizing this event to be held at Falcon Lake. A budget has been presented to the WARC executive. Rooms are still left at the Falcon Resort but Derek advises that those interested in staying at the resort should reserve a room ASAP.

ARES:

Jeff Dovyak VE4MBQ asked everyone to read the report in the Newscaster. Ice conditions will be announced on WPG and will be referred to ice structure. There may be an ARES group starting up in south central Manitoba.

OLD BUSINESS:

- ☞ License plates for vehicles: The call sign will be spaced as requested by the applicant i.e.: if you want VE4 KAZ then you must specify the space between the prefix and suffix.
- ☞ By-Law to provide for expulsion of members: Tom VE4SE suggested WARC members first decide whether such a bylaw is wanted before taking further action.

NEW BUSINESS

- ☞ Moved by Derek VE4HAY and seconded by Mike VE4MP that WARC nominates Dave Panting VE4EF as our candidate for Ham of the Year at Ham Fest. **Carried.**

Moved by Dick VE4HK that the meeting be adjourned.

Minutes submitted by Roxanne VE4ZF

Longitudes and Latitudes (W2IOL)

By Alexander, VE4APN

It is not "Where in the World is Carmen Sandiago?" but for Radio Amateurs wanting to know where in the world ?? W2IOL's Latitudes and Longitudes may be the answer. Listings are in alphabetical order by callsign, location prefix, city, longitude (degree minutes) and latitude (degree minutes)., e.g., Winnipeg:

VE4 MB WINNIPEG 49 53 N 97 10 W

Check out - <http://itre.uncecs.edu/radio/atlasinfo.html>

Those with text only access to Internet try Yahoo or AltaVista with search string - ve4 Manitoba amateur radio

Home-Brew Night at WARC

By Lee, VE4ANC - The Program Guy

Bring the carboy, Bunsen burner, condenser coil, and mash out of hiding! OOPS, wrong stuff, meant for a different audience...I'm supposed to be talking about home made HAM radio equipment here.

The WARC April meeting topic is traditionally "Home-Brew Night." Anyone who has done ANY KIND of construction project.....NO MATTER HOW SIMPLE...is encouraged to bring it out to show others that the spirit of HAMS building some of their own station equipment is still alive and well.

This aspect of the hobby used to enjoy considerable support among the ranks of the HAM fraternity. As a group, HAMS were universally noted for ingenuity, creativity, and our ability to take a pile of components scrounged from some back alley discarded TV or radio, and turn it into something useful for our own radio stations.

Unfortunately, with the proliferation of the complex solid state radios, the average HAM just doesn't have the equipment, knowledge, or confidence to work on these newer expensive and intimidating radios.

While we must admit to ourselves that HAMS constructing their stations totally from scratch has now become viewed as an oddity rather than the norm, there is a lot of enjoyment and education to be had in tinkering with simple construction projects that can enhance the operational capabilities of a HAM shack.

Most projects are within the building capabilities of anyone who can recognize a screwdriver 6 out of ten times, can determine which end of a soldering iron is hot after being plugged in for ten minutes, and assume that you can understand that controlling that urge to lick exposed light sockets while simultaneously grabbing cold water pipes will prolong your enjoyment of the hobby. All you really need is just a little bit of curiosity, coupled with a small dose of the radio pioneering spirit.

Projects which are suitable for your consideration are QRP transmitters, simple kit SWL receivers, transmatches (antenna tuners), audio distribution panels, 12 volt power supplies, microphone matching circuits, HF and VHF antennas, DF homing equipment, TNC to microphone switch boxes, external audio amplifiers for your HT, interfacing a tape recorder to your radio, computer interfaces for packet, rty, or code...the list of neat little projects is almost endless.

These simple projects can add greatly to the capabilities of the shack, you save money (theoretically), and most of all,

you develop a sense of accomplishment. Also, for those of you who have never picked up a soldering iron before, you may learn a few skills which can help around the house in the form of technology transfer... makes for a great excuse anyway.

I ask that any and all of you that have done any construction work over the past year to bring it out for "Home-Brew Nite" as an encouragement for others in the club to try this aspect of the hobby.

The Manitoba Marathon:

By Ralph, VE4RY

Fathers' Day Fun for Everyone!

In 1980, when I first got my ticket several hams talked me into volunteering for the Marathon, promising lots of fun and "a great way to gain operating experience and meet new people". All I needed was a hand-held and a couple of hours on the morning of Fathers' Day. I've gratefully been posted at Mile 6 every year since!

This, my friends is an opportunity to really enjoy the hobby and at the same time perform a valuable service by assisting with the communications for a great cause. This is a prestigious and renowned event. Our contribution is very much appreciated by the Marathon people who have often stated they basically leave it in our hands because we do so well.

Kay, VE4YF co-ordinates us in a very logical way, conscientious of the individual capabilities of each ham so that you'd have to try real hard to go home from the Marathon feeling anything but very pleased with your accomplishment. You will feel proud of being a ham, I'm sure. (The usual T-shirt freebie is a nice souvenir, too!)

This year Father's Day is Sunday, June 15th. Kay has already signed up over 20 people; she would like to recruit around 70 hams this year. New hams are placed with someone more experienced so there is no concern about doing things right. And the old guys keep coming back for more. The promise made to me back in 1980 was true.

The main communications for the Marathon is done on local 2-meter repeaters and the hams are co-ordinated through a net controller so basically all you really need is an HT with a good battery and a bit of willingness to give something back to this wonderful hobby of ours.

To sign up, or if you have any questions at all please feel free to call Kay at 669-5077 or Ralph at 663-8894, daytime please.

FleaMarket

By Pat, VE4PLG

Well it's flea market time again, and there is only a couple of tables left so if you are interested in selling any of your wonderful "junque" then you'd better give us a call and book a table. It looks like another sell out again this time. If we run out of tables we will take "advanced" bookings for the Fall Flea Market. Hi! Hi!

The date is Sunday April 20/97, at Waverley Heights Community Centre 1885 Chancellor Drive. Doors will open for vendors at 9:00 AM and selling will begin at 10:00 AM. Each vendor will be allowed 2 helpers, but they MUST register along with the vendor or they will have to wait until 10:00 AM to be admitted. This will allow for less confusion for the convenors when the vendors are bringing in their "goodies". Your co-operation on this matter will be greatly appreciated.

Costs will be the same as last time, \$1.00 admission for everyone, including vendors, helpers and convenors. Table costs are \$5.00 each for members of WARC, MRS and WSC. The cost for non members is \$10.00 a table.

Ruth, VE4XYL is again preparing the most delicious sandwiches and coffee for everyone's enjoyment. So come on out and partake of the great food and the wonderful friendship enjoyed by one and all at every WARC flea market.

Talk-in will be on 147.390+ in case anyone should need assistance in finding the flea market.

Winnipeg ARES will be holding a Silent Auction at their table, so if you would like a chance to win one of their great prizes stop by the ARES table and purchase a couple of tickets.

Dave Snyder VE4XN will be there representing MARM. He will have goodies to sell and will have information on the MARM Ham Fest and probably on the Ham Fest at the Peace Gardens as well.

If you need a table or if you would like to "VOLUNTEER" to help in any way give Dan VE4SYG or myself Pat VE4PLG a phone call at 339-3018 (Our phone number and address are not correct in the Blue Book) or contact us on packet as VE4PLG@VE4KV (Pat) or VE4SYG@VE4KV (Dan) or arrange during the MRSnets.

We really appreciate all the work our volunteers do at every Flea Market.

Canadian Hams on Internet Confirmation

By Dino, VE2DM

As the Canadian Hams on Internet Database list hits 3000 callsigns, we have only you to thank for the success it has seen over the past few years. Without your participation, the project would have never reached the level of popularity it is seeing today. Amateurs from everywhere are using the list to find fellow ham friends from all across Canada.

In the coming months, I will be modifying the output of the listings on the web pages to make them faster to load and search. This should also increase the stability of the browsers downloading the larger pages (i.e. VE2, VE3, VE6, VE7 call areas). Therefore check out the site every once in a while for the new format.

I'd also like to thank all of those who have come back and made corrections to their entry. It's great to see. And don't forget to tell others about our project. We'd like to list all Canadian Amateurs with Internet e-mail addresses. Also if you have or know of a club or amateur hosting a web page, drop us a message and we'll include it in on the Canadian WWW Sites page at

<http://www.cam.org/~dino/hamcanadawww.html>. The page currently has over 340 Canadian amateur radio web sites!

Winnipeg ARES Silent Auction

Winnipeg ARES will be once again holding a silent auction at the WARC spring flea market. The following is a list of some of the valuable prizes that you have a chance to win. Please enter early and often.

Prize	Donor
2 meter trunk antenna	Micro High Tech
J pole antenna	VE4RY
3 x 12 volt adapters	ID'ers - VE4AIM
Battery checker	Anonymous
Base & spkr for rig	VE4HK, VE4MMG
T-shirt	Panduit
Copper J Pole Antenna	UMARS - VE4ARN
Larsen antenna	ACE Communications
RAC membership	RAC - VE4OV
Gym bag & golf shirts	VE4HAY
Legal will	Don McKinnon VE4DJM
Back support	Fitness Physio
Gym bag	Anonymous
Golf passes	City of Winnipeg
Golf club head covers	Anonymous
1 hour massage	VE4RST
Other prizes	TBA

Special Newscaster Report - Sprint Flooding by Jeff, VE4MBQ - EC Winnipeg ARES

By now most readers will have read newspaper accounts, seen TV news stories, heard broadcast news items or heard Manitoba ARES SEC Don Mackinnon relate information on possible spring flooding.

It is quite possible that amateur operators throughout southern Manitoba will be in a position to utilize their communication skills and equipment to provide communications support for the civil authorities engaged in flood control measures. There are organized ARES units in the Interlake, Selkirk, East Selkirk/Oakbank, Pinawa, and South Central Manitoba. Generally the local ARES unit leaders are the point of contact for municipal authorities, while the Manitoba ARES SEC is the point of contact for the provincial government.

Amateur radio flood communications WITHIN the Floodway Protective Zone will be co-ordinated by Winnipeg ARES likely through the City of Winnipeg Emergency Operations Centre (VE4EOC) or a specific City Flood Control HQ (VE4YWG). Amateur radio flood communications on the provincial level will be co-ordinated by Manitoba ARES through the Winnipeg Senior Citizens Radio Club facility. VE4WSC will be the PROVINCIAL amateur command centre staffed by WSC members. Requests for local amateur radio support will be handled by the local ARES unit - Manitoba ARES will look after unorganized areas. Additionally Manitoba ARES will activate WSC for use as a communications link if requested by Manitoba Emergency Management (EMO) to communicate with rural ARES units or other rural operators.

In Winnipeg the primary city-wide repeater is VE4WPG 147.390+ with backup city-wide repeater VE4WNR 145.350-. VE4UMR 147.270+ may be utilized to support operations in south Winnipeg/St Norbert.

For southern Manitoba VE4UMR 147.270+ will likely be used from the south perimeter highway to approximately Glenlea. VE4CDN 145.270- will likely be used from Rosenort/Aubigny to Emerson. The StAgathe/Niverville radio "gap" might be served by VE4UMR after the planned upgrade by UMARS, or by VE4MAN 146.610- if operational, or by a temporary MRS repeater. The WSC group has been asked to monitor 3.7430.MHz LSB and VE4KV(packet) once the WSC facility has been activated.

Amateur operators involved in flood communications should ensure that they are registered with their local ARES co-ordinator or municipal co-ordinator if no organized ARES group exists. Notes should be kept documenting times on and off duty, out of pocket expenses and radio traffic sent and received by you. If you are interested in providing

communications support please contact Jeff Dovyak VE4MBQ or Don Mackinnon VE4DJM.

If you are not participating in flood control operations please keep away from flooded areas and flood control work sites. Sightseers last year created an enormous problem for the civil authorities who had to divert vital resources away from flood control duties to use for crowd and traffic control.

International HamFest at the Peace Gardens by Dick, VE4HK & Pat, VE4PLG

Pack your bags! Get ready for the "funniest" weekend of the year! The 1997 Hamfest is coming, on July 11-13.

The International Peace Gardens Hamfest is the perfect chance for a relaxing weekend in a bucolic setting. The weather is usually ideal in the Peace Gardens. The scenery is exquisite. Burghardts display will make us think it is Christmas in July.

The Peace Gardens is only a four hour drive from Winnipeg. There is lots of camping in the "Field of Dreams" for everyone. There is sure to be lots of tailgate flea market junkie to purchase. The Hamfest Committee has been working harder than ever to acquire good prizes for contests and for the draws.

Be sure to register as soon as you arrive at the Hamfest. The cost is only \$13.00, and entitles you to enter all the contests, to trip the light fantastic at the dance, to vote for your choice as "Ham of the Year", and to a delicious pancake breakfast on Sunday morning.

Make your plans today to attend the 1997 Hamfest! Better get into serious training for the brand new Olympic calibre contest which will debut at this Hamfest!! You could win a wonderful prize!

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by Louie, VE4PLJ

Use a Separate Circuit

Never plug your computer or other sensitive equipment into the same circuit as a major motor-driven appliance such as a freezer, dishwasher, air conditioner, refrigerator, printer, or photocopier.

Unplug Equipment

Turn off or unplug any sensitive equipment when not using it, especially if you will be away for several days, or when a severe storm is approaching.

Protect Your Data

When working with your computer, protect your newly-entered data by saving it to your hard or floppy disk periodically throughout the day, especially during bad weather.

Some software packages will save new material automatically at the time intervals you specify. Once saved, your data cannot be erased by a temporary loss of power.

Protective Equipment

Surge suppressers: Surge suppressers come in many shapes, sizes and forms, and their prices range from several dollars to several hundred dollars. Wall receptacles, power bars and stand-alone units are available, but their basic function is the same- to limit a voltage surge to a less damaging level, usually in the range of 250 volts (V) to 400 V (on a 120-V system).

The most important fact about surge suppressers is that they do not provide complete protection against all surges. Firstly, for some very sensitive equipment, even 400 V for a fraction of a second may be too high. Secondly, if the surge is very powerful (high energy) or very fast, the unit may not be able to limit the voltage to its designed level. Thirdly, surge suppressers are designed for fast "surges" (see the definition under "types of disturbances") and not for permanent over voltage conditions, therefore the slower voltage swells, and sustained over voltages will get through. A good way of applying surge suppressers is to use one at the service entrance and another one at the equipment to be protected. Manitoba Hydro can provide guidance in the proper application of surge suppressers.

A surge suppresser may have been damaged after one or more shots, depending on its energy rating. Thereafter, it offers no protection but gives the user a false sense of security.

Non-Canadian, certified surge suppressers may also be a potential fire hazard. The user should make sure that the unit is adequate for the job and is still functioning. Some units have a visual indicator light to let you know the condition of the unit.

Some computers have built-in devices to protect them against power disturbances, and many digital clocks (and other equipment that includes such clocks) are sold with battery backups. Discuss your sensitive electronic equipment with your supplier who can then recommend appropriate additional protective devices that can meet your needs, at a reasonable price.

Uninterruptible power supply (UPS): Many computers and microprocessor-based equipment are connected to the utility supply (the receptacle) through a UPS. The UPS maintains a continuous utility supply in case of a utility outage, thereby ensuring that data is not lost and process is not disrupted. An on-line UPS (one that is not by-passed when utility power is on) is also an excellent buffer to isolate normal power disturbances coming from the utility system. A small UPS can be bought for \$250 to \$300.

Amateur Radio Events

April

- 14 144 MHz Spring Sprint
- 22 222 MHz Spring Sprint
- 30 430 MHz Spring Sprint

May

- 10 902 MHz Spring Sprint
- 10 1296 MHz Spring Sprint
- 10 2304 MHz Spring Sprint
- 16-18 Dayton Hamvention
- 17-18 50 MHz Spring Sprint

'HAM' RADIO OPERATOR'S COURSE

COURSE INSTRUCTOR

Larry R. Burkhardt, VE4LRB

Electronics Engineer

For those interested parties who still wish to take this course, I am pleased to announce that I can now offer a venue and am willing to teach classes of less than 10 students. I would appreciate it if members of WARC who know of anyone who is interested in taking this course would pass on this information and ask interested parties to contact me *PERSONALLY* after 6 p.m. at 487-0509

INTRO.. TO SPREAD SPECTRUM

by Ian Kennedy, VE4MUD

Spread spectrum modulation techniques are used to widen the rf bandwidth of a signal so the transmitted bandwidth is much wider than would be necessary for information transmission alone. This wider bandwidth is often generated by modulating a carrier of the narrowband signal with a spreading waveform or spreading code. This modulation greatly increases the signal bandwidth and usually determines the spectral characteristics of the resultant signal. The more common spread spectrum signals include direct sequence signals, stacked carrier signals, frequency hop signals, time burst signals, and chirp signals. Hybrid spread spectrum signals are generated using more than one of these modulation techniques. The more common modulation techniques such as frequency modulation (FM), amplitude modulation (AM), phase shift keying (PSK), frequency shift keying (FSK), etc., are not considered spread spectrum modulation techniques when only the traffic modulates the carrier.

DIRECT SEQUENCE SIGNALS

The direct sequence signals are distinguishable by their frequency spectrum. The shape of the spectrum with nulls on each side of the major lobe is characteristic of direct sequence signals. When listening to a receiver's audio output, the only indication that a direct sequence signal is present is a gradual increase in the noise level as the receiver is tuned toward the centre frequency of the signal. Only on rare occasions can the traffic be heard.

The bandwidth of the this type of signal can vary greatly, from 10's of kHz to a few hundred MHz.

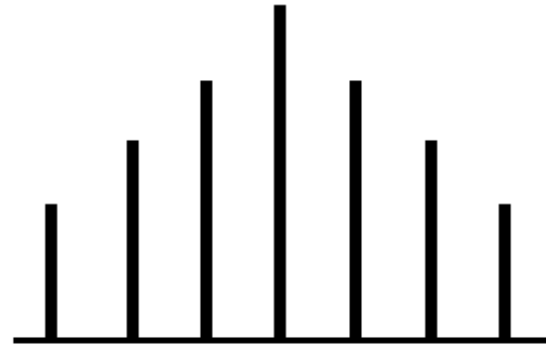


Frequency Spectrum of a Direct Sequence Signal

STACKED CARRIER SIGNALS

The second type of spread spectrum signal is the stacked carrier signal. This signal consists of numerous modulated carriers that are separated in frequency. The number of carriers that are visible within any given stacked carrier signal will generally range from two to fifteen. These modulated carriers are usually separated in frequency by four to thirty kHz or more. When tuning a receiver through the

signal bandwidth, the same traffic is heard at each of the carrier frequencies.



Frequency Spectrum of a Stacked Carrier Signal

FREQUENCY HOP SIGNALS

The third type of spread spectrum signal is the frequency hop signal. These signals generally have numerous carriers (tens to thousands) which can be selected in a pseudo random sequence. The signal essentially hops from one carrier frequency to another. While stacked carrier signals have all of its carriers transmitting at the same time, frequency hop signals generally only transmit one carrier at any instant in time. The spectrum of these signals will often appear to be a broadband of noise instead of individual carrier channels. The shape of the spectrum is generally flat. However, atmospheric effects or transmitter and receiver filtering may cause the carriers to have different amplitudes. The total bandwidth of these signals can range from tens of kHz to hundreds of MHz.



Frequency Spectrum of a Frequency Hop Signal

HYBRID SPREAD SPECTRUM SIGNALS

The hybrid spread spectrum signal is composed of two or more combinations of spread spectrum signals. One example of this is taking the centre frequency of a direct sequence transmission and frequency hopping it in a pseudo random pattern.

CHIRP SIGNALS

The last spread spectrum technique is chirp modulation. The chirp signal is usually found in radar systems but can be used for communications. Unlike most other spread spectrum modulation techniques, chirp signals do not employ pseudo random codes. During one chirp period, a chirp system changes the transmitted frequency from an initial rf frequency to a final rf frequency which is synonymous to a chirping sound. The frequency sweep is normally performed in a smooth manner. Traffic is sent by sweeping up for mark and down for a space, depending on system design. A chirp signal frequency spectrum is relatively flat since the sweep is at a constant rate.



Frequency Spectrum of a Chirp Signal

ADVANTAGES OF SPREAD SPECTRUM USE

1. Direct Sequence Advantages
 - A. Processing Gain
 - a. equals the ratio of the rf bandwidth divided by the traffic data rate
 - b. if a signal has a chip rate of 1 MHz then the RF bandwidth will be 2 MHz, if the traffic bit rate is 1 kbps then the processing gain will be: $10 \log ((2 \times 10^6) / 10^3) = 33 \text{ dB}$
 - B. Jamming Resistance
 - a. if a strong narrowband jamming signal is received within the bandwidth of the direct sequence, the receiver spreading code tends to spread the jammer over a wide bandwidth while concentrating the direct sequence into its original narrowband traffic;
 - b. the large drop in jammer dB and the subsequent jump in traffic dB makes the system jam resistant.
 - C. Security
 - a. with the use of non-linear spreading codes, unintentional interception becomes very difficult.
 - D. Low Probability of Intercept
 - a. signal frequency spectrum looks like noise, and signal-to-noise ratio is very low making the signal difficult to detect or intercept.
 - E. Selective Addressing
 - a. by using different spreading codes, numerous users can use the same RF bandwidth without interfering with one another;
 - b. in knowing all the spreading code, each user can be accessed individually.

2. Stacked Carrier Advantages
 - A. primarily used for communications reliability;
 - B. simple to generate and demodulate;
 - C. used for communications in the HF and VHF bands.
3. Frequency Hop Advantages
 - A. processing gain;
 - B. jamming resistance;
 - C. traffic privacy;
 - D. ranging;
 - E. multiple access;
 - F. short synchronisation acquisition time;
 - G. multipath rejection, and
 - H. near-far performance.
4. Chirp Advantages
 - A. processing gain;
 - B. jamming resistance;
 - C. multiple access, and
 - D. system simplicity

CONCLUSION

Believe it or not, this has been a very short, non-technical introduction to spread spectrum modulation. It was intended to introduce the majority of the Amateur Radio community to this form of communications.

AEA Inks Deal To Sell Product Lines Forwarded from packet by Chris, VE4SET

Advanced Electronic Applications (AEA) has closed deals to sell its product lines to two other companies, but the AEA name will live on. Former Chairman Mike Lamb, N7ML, says AEA's line of antennas, antenna analyzers and cable-testing equipment was sold, effective March 7, to Tempo Research of Vista, California. Tempo will handle all technical support, warranty and after-warranty service and plans to produce the products in the antenna, antenna analyzer and cable-testing line that AEA had been producing before it ceased operation late last year. Tempo will continue the AEA name under a separate division. Lamb says he will assume a primary marketing position with the new division.

Lamb said he's excited about the prospect of continuing a role with a portion of the AEA product line that he had a particular interest in. He said he hopes to work on new product development as well.

Timewave Technology of St. Paul, Minnesota- already a major name in ham radio gear — is buying the rights to all other AEA products, including its digital line. But Timewave president Randy Gawtry, K0CBH, asked the amateur community to give the company a few weeks to set up the

new product line before calling. "Watch our Web page," he said (its at <http://www.timewave.com>). Gawtry says a purchase agreement is in place, and Timewave is in the process of making the product line transition from AEA to Timewave and hopes to be manufacturing products soon. Timewave will have the right to use the AEA name for one year (AEA model numbers will be continued, however). Gawtry said Timewave also will handle technical support and warranty and after-warranty service of the new product line, which includes AEA's DSP-232 multimode TNC, introduced last year.

Callers to the former AEA number are now being directed to either Tempo or Timewave, as appropriate. Tempo Research is at 619-598-9677. Timewave's number is 612-452-5939.

All Timewave product manuals are on the WEB Site and they "may" or "may not" put AEA product line manuals in there too.

As an aside Randy said "All Radio Shack product manuals including schematics are on the Radio Shack Web site."

Editors Ramblings
BY Derek, VE4HAY

It's been a while since I have had any room in the newsletter to have my say of what's happening in Amateur Radio. I have had the fortune to have had lots of articles. I really want to thank Ian, VE4MUD for his two great articles. They were most appreciated. Now lets see if we can get someone else to write us something. It does not have to be as elaborate as Ian's with the graphics. It can be as simple as a tip for connecting twin lead properly, or how to build a balun.

Everyone **please take note** that Winnipeg ARES has been asked by the City Engineer to help them out with Ice build up at the various city bridges this year (they almost lost the Elm Park Bridge last year). So ARES will be holding a net each morning starting tomorrow (Apr. 397) on the

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VE4WPG repeater from 07:30 -07:45 hrs. This net will run until there is no threat of ice jams on the river. So if you hear some strange QSO's happening please let them finish. This is the first time ARES has been formally asked to help out with the City of Winnipeg in communications, and we would like to do a proper job of it.

The Manitoba Repeater Society will be holding is Annual Meeting on Thursday April 17th and this year they will have an actual election of officers (with voting). They

Comments or if you just want to reach us :

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Winnipeg, MB R2M 3L5**

ask that all members attend so that they can have a quorum
of voters to make it legal. 73 de Derek, VE4HAY