Q R M

November 2002

Quinte Amateur Radio Club Inc. Newsletter

PO Box 23039 BELLEVILLE Ontario K8P 5J3

NOTICE OF MEETING:

DATE / TIME: **November 20, 2002 @ 7:30PM**

LOCATION: Loyalist College (Pioneer Building) **Room P-17A**

PROGRAM: **WIRELESS DIGITAL LAN's**
Dave Ward VE3BIP

Club Repeater: VE3QAR 146.985 MHz.
2 meter net: Tuesday 7:30 PM on VE3TJU 146.730
QARC Homepage http://www.qarc.on.ca
QARC Homepage http://www.qarc.on.ca/ provided free of charge by:
Lakeshore Internet Services, 199 Front St, Suite 113
Belleville K8N 5H5 (613) 962-9299
Monthly Meetings: 3rd Wednesday 7:30 PM Loyalist College
(Pioneer Bldg.) Room P-17
Hams 'n Eggs: SATURDAYS 8:00 AM Quinte Restaurant 135 Cannifton Road
Foxhunt: Sundays at 2PM. Check in on VE3QAR for details.

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QARC EXECUTIVE

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Quinte Amateur Radio Club Minutes for October 16th, 2002

The meeting was opened by our President, **Peter, VA3PKH** at 7:35 pm not at our usual QTH but in Alumni Hall in the main building at Loyalist College. He introduced our guest speaker for the evening **Robin Haighton, VE3FRH President of AMSAT – NA**. His presentation is summarized below. There were hams from all the neighboring clubs, Trenton, Tri-County, Napanee, Kingston, and Picton, as well as **Richard, VE3UNW** and **Richard, VE3IHI**, both from Nepean.

Robin Haighton VE3FRH on AMSAT - New Projects 2002-2006

Satellites are a pretty expensive business**.** The Satellite itself is relatively inexpensive, it's the launch that is expensive. Robin is asking the Amateur Radio community to support AMAST with donations and membership to AMAT. Jim Haynie President of ARRL and Paul Middleton sales manager for Kenwood say that Satellites are the future for Amateur Radio.
There is still a lot of experimenting on Amateur satellites. It's lots of fun and opportunities in experimenting with antennas. AMSAT started in 1969 after Oscar 1,2, 3 and 4 the first launches in Vandenburg Base in California. Anything that was able to fly was considered fantastic by the military in those days. Today it is considerably more difficult and not really amateur oriented. It's the cost. A minimum of $2M U.S. is required to just be in the business. You can use any mode to work a satellite, such as SSB, CW, PSK31, slow scan, high scan etc. Listening to or working a satellite is very predicable because you know when it will be in your area. AO40 launched May 2000 could be received from Alaska, or Florida or the Maritimes or Australia or NZ or Japan or Europe wherever the footprint goes to it can be heard. At a certain time and date it will pass over your region. The MUF is the frequency you are on! This is the advantage of satellite communications. Other advantages are the tricks you can do. Phase 3D was approximately $4M U.S. and it was half paid by NA. It is up to 61,000 Kms away from earth at Apogee and about 1000Kms at Perigee. 2.4Ghz is the downlink and 70 cm or 1.2 Ghz is the uplink. Robin mentioned that you could have a 60 cm dish at ground level and be able to automatically track it with a computer. With AO40 you can track it simply, because you hardly have to change the angle of the antenna. You only have to move it a few degrees every 30 minutes or so. AO40 had an explosion on board.

The current experimentations:
NASA heard about AO40 and approached AMSAT asking if they would be willing to include a GPS on board their satellite. Robin mentioned that there are 36 GPS Satellites around earth today. NASA wanted to know what would happen if you were outside the ring of satellites? Can AO40 see them? AMSAT agreed to relay information to NASA. AMSAT forgot about NASA's request after the explosion, for now. They had too many problems of their own. The satellite was passing through the Van Allen belt for over a year. Then AMSAT finally turned on the GPS and surprisingly it worked 100%

providing NASA with all kinds of Data; even at 60,000 Kms out. It provided accuracy within a few metres. The results were very interesting.
For example, satellite TV providers each have a "slot" for their satellite. All around the equator there are only so many "slots' available, otherwise the satellites would be to close to each other. Each satellite must be able to be maneuvered to prevent them from bumping into each other. You know if the satellite is 20 miles or 200 miles apart. NASA wanted to know this so that they could control the position of these "slots".

University of Surrey wanted to know about the Van Allen Radiation Belt, such as what is the strength of the radiation? Is it wide and how does the radiation compare on the peeks and at the edges? AMSAT can assist in these areas.

EAGLE, is a 2ft cube. AMSAT is always looking for where and when the next ride will be. There are many different sizes of satellites and rockets used by different countries. AMSAT has standardized their design so that it will fit on any rocket and can be launched by any country. They are now building what is termed as "generic" satellites. The 2-foot cube will fit on any satellite. They chose this size because it is the largest size that can be put on any rocket. It may be ideal for launching but not necessarily ideal when in orbit. AMSAT can get different illuminations depending on its position relative to the sun. The sides of EAGLE can be flipped out and this can overcome the problems of being seasonal. It will work at all seasons.

Inside the Satellite:

There are fuel tanks and modules that are strapped on the edges to house radio equipment. Also there is quite an antennae array. (This array was described in detail by Syd Horne, VE3EGO, in his talk last month about building a dish to communicate with AO40. Visit the QARC web page at www.qarc.ca). EAGLE uses Patch antennas for 2M, 70cm, 2.4Ghz and 1.2 Ghz. Robin mentioned how tricky it is to get one side of the Satellite always facing the earth. As the satellite orbits the earth you never have the same side facing the earth unless you do something about it. They always want the antenna side facing the earth.

There are 5 battery systems that are fed through a Battery Current Regulator (BCR) at 28v. To-date they have used NICADs. AMSAT is looking at other newer types, like Metal Hydride and Lithium Ion to get more capacity at lower rate, plus the number of times a battery can be charged. They still favor the NICADs because they can be charged more often then the newer ones before they have to be replaced. Robin used slides to show the details of the satellite inside and out.

Robin talked about a magnetorquor that is a rod with a coil of many turns. It is used to change the attitude of the satellite. AMSAT will not know the exact position of the satellite after it is launched and, therefore, must be able to correct the attitude and stabilize it in to the desired position.

Transceivers and Gear. Most satellites last longer than their original design life of about 7 years. AMSAT is getting 14 to 15 years life, which is a credit to the designers. A lot of radiation-hardened materials/components are used. Large boxes house the transmitters on 2 M, and on the "S" band, 2.4Ghz, and "C" band, 5Ghz, all downlink. The higher the frequency the greater the loss, but the antenna can be smaller. Robin showed a pictorial of the positioning of the transmitters, batteries and other boxes for other equipment.

Inside the middle of the satellite is a fuel tank that may be used to return the satellite back to earth if that is an FCC requirement. There are international committees looking at orbital debris. This debris is very worrisome because a small piece traveling at 18,000 miles and happens to punctures a space suit of an Astronaught could be very fatal. There are so many countries are putting satellites into space it is getting very crowded and is becoming very dangerous. Another problem. Referring to Eagle's Orbit Robin said that it is proposed to go into a Geo synchronous Transfer Orbit about 35,000 KMs at Apogee and 1000Kms at Perigee
All Satellites use solar cells. In the early days they were just 10-11% efficient. Now they are about 27% efficient. AO 40 is 17% efficient. Next year they will be 35% efficient. Solar cells are very expensive.

What is the Satellite specification? It will have a 70 cm uplink and a 2M downlink that is the most popular for Hams. It includes an "L" band 1.2Ghz uplink and "S" band 2.4 Ghz downlink. These satellites are easy to work and not very expensive. Earlier Robin mentioned the GPS on board as well as a Radiation detector.

The software is improving with the technology. The software that has been used is 20 years old. It was developed for chips that are no longer available! AMSAT wants to develop new software using Linux to make and make it available to the public.

The anticipated launch date is 2006. The cost will be approximately $600,000 for the satellite about $2M for the launch! Robin says that the only way this money can be raised is through donations, especially the amateur radio community and membership to AMSAT. So any donations are greatly appreciated.

This concluded Robin's main presentation.

Following his main presentation Robin showed a power point presentation of AMSAT's next Satellite called OSCAR-E ("ECHO"). One of the most important criterias that any satellite must meet is that it must not interfere with the launch. That is why there is a lot of vibration and other engineering tests that must be made to ensure this.

The ECHO Presentation can be found at www.amsat.org on the main page under "Today's Feature".

The presentation was concluded about 9:10 pm followed by questions.

Robin mentioned that there is an AMSAT News service Satellite report every week at the above web site.

The Quinte Amateur Radio Club donated $126.00 to AMSAT.

Tnxs to Robin for editing the notes I took of his presentation.

50/50 Draw: **Al, VE3ALS**, won the 50/50 draw.

One note of business was that if anyone is interested in assisting at “Safe Streets” our annual Pumpkin Watch, on October 31st, they must get registered tonight.

The attendance was **38.**

The meeting ended about 9:30 pm, a good time was had by all.

Mike, VE3VMP
Secretary, QARC

VE3FCK Amateur of the Year

In response to a call for nominees for the Radio Amateurs of Canada-sponsored "Canadian Amateur of the Year Award", the following names were submitted to the RAC Board of Directors for consideration:

1. David Cameron VE7LTD
2. Tom Cohoon VE1TA
3. Tom Domonkos VE3FCK
4. Wilfried (Wilf) Mulder VE7OHM
5. Ernest Myers VE3GM/Doug Last VE3NBL (jointly)

The Board faced a difficult task in selecting from among the five worthy nominations. These fine people have made great achievements in the past and continue to make significant contributions to Amateur Radio today. After careful consideration, the Board has determined that the award should be conferred on Tom Domonkos VE3FCK.
The Board congratulates Mr. Domonkos as the 2002 "Canadian Radio Amateur of the Year", and commends all the nominees for their very valuable contributions to the enrichment of Amateur Radio and its worthiness to the public.

RADIO REGULATIONS: A WORLDWIDE CHALLENGE TO 70 CM

If you operate on 70 centimeters anyplace in the world, listen up. Your future access to that band is in peril. Q-News Graham Kemp, VK4BB, has the details on how a proposed satellite system could run hams off of the band:

It has come to the attention of the South African Radio League, SARL that the threat to the 70-cm band -- worldwide -- is once again very real. The SARL has just received a discussion paper which will be tabled at the World Radio Conference next year -- WRC-03 – which directly targets the portion of 432 to 438 MHz for exclusive use by the planned Earth Exploration Satellite Service or EESS, due to be launched soon.

If this proposal is carried at the World Radio Conference next year it, will see this portion of spectrum allocated on a worldwide basis and this spells the death knell of all 70-cm ham radio operation.

The section of the proposal and the motivation is as follows: Agenda Item 1.38: '...to consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite service active in the frequency band 420-470 MHz, in accordance with Resolution 727 that was revised at WRC-2000.

But why target the Amateur Radio allocation at 70 centimeters? The researchers who want it say it's the only frequency that will work. Again, Q-News Graham Kemp, VK4BB:

According to the United Nations Conference on Environment and Development UNCED held in Rio de Janeiro in 1992, there is an urgent need for assessment and systematic observations of forest cover and rate of forest degradation in tropical and temperate regions. Active space borne sensors Synthetic Aperture Radars (SARs) are needed to enable the monitoring of forest biomass.

Systems operating on frequencies around 450 MHz can penetrate the canopy of forests, and have the capability to determine the ground-trunk interaction and are in the context of forest cover information of particular importance.

Systems operating at 1.3 GHz, or higher frequencies cannot penetrate the canopy. The spectrum around 450 MHz is also optimal for monitoring of continental ice and for monitoring of vegetation and soil surfaces for desert and tropical areas.

New IRLP Codes

I mentioned a few months ago that the IRLP node-numbering scheme will be moving from 3 digit to 4 digit node numbers. This switch will occur this weekend and as of Saturday morning we seem to be switched over. In addition the reflectors have been upgraded to "super reflectors" with multiple channels.

Now the details.

A 4-digit number instead of the previous 3-digit number will now reference all the IRLP nodes. Existing nodes have a zero appended to the node number, for example our node in Belleville was node 209 and now becomes node 2090 and the Kingston node switches from 275 to 2750, etc. New nodes will be provided with 4 digit numbers, which do not necessarily end with zero. For example there could be a node 2091. To link to a specific node you enter the 4-digit node number only. For example to connect to Kingston you would enter 2750. To disconnect from a node you now enter "73"

Note that some nodes use an authorization code to restrict access, for example to club members only. To access these nodes you need to enter the authorization code followed by the 4-digit node number. To use these nodes you need to ask the system administrator for the code. Restricted access nodes seem to be more common in the US than Canada. We have no plans to restrict access on the Belleville node.

The reflectors have been upgraded to super reflectors, which means each reflector is now capable of supporting up to 5 channels numbered 0-4. To connect to a specific reflector and channel enter its 4-digit code. For example, to connect to reflector 910 channel #0 in Toronto enter 9100, channel #1 enter 9101, and so on. To disconnect from a reflector you enter "73". Each channel operates completely independently as though there were 5 seperate reflectors at the same location. This means there will be total of about 50 reflector channels worldwide.

Prior to super reflectors if you entered the reflector number + "2" you would stay connected indefinitely. For example 9102 used to connect you to reflector 910 indefinitely; now it connects you to reflector 910, channel #2. For the moment the "no-timeout" option is not available. I will let you know when it is reactivated. I have deleted the help function that was available by entering 4357 (HELP). Entering the "#" will still provide help but the help needs to be updated.

QARC CHRISTMAS DINNER
Wednesday December 11 2002
6:30 P.M for Dinner at 7:00 P.M.

Please Call Peter VA3PKH 962 – 1386 if you wish to attend.

Northway Banquet Room

M • E • N • U

Roast Beef (Black Angus Beef)

Veal Parmigiana

Chicken Stuffed Broccoli

Lemon Pepper Chicken

Fillet of Sole

Above served with Baked Potato, Salad, Dessert and Coffee or Tea.

$13.95 per plate + tax

(15% Gratuity Added to Total Bill)

Choose two (2) items from the above meals.

Children's Meals • $6.99

Please order 3 days in advance.

Extra Parking and Entrance
Available At The Rear of Restaurant

WEDNESDAY
DECEMBER 11
6:30 PM

Treasurers Report

MONTH TO DATE

Revenue		Expenses	
Membership Dues	$50.00	Rac Membership	
Coffee		Office Supplies	$25.68
50/50 Draw		Incorporation	
Donations to QARC		News letter printing	$3.31
Interest	$0.16	Insurance	
		Social Events	
		Donations	$126.00
Total revenue	$50.16	Total Expenses	$154.99
		Month to Date Income	-$104.83

YEAR TO DATE

Revenue		Expenses	
Membership Dues	$150.00	Social Events	
Donations to QARC		Post box rental	$77.04
50/50 Draw	$14.50	Office supplies	$78.27
Coffee	$10.30	News letter printing	$18.22
Repeater Move	$0.00	Door Prizes	
Interest	$0.70	Insurance	$583.20
		Donations	$201.00
		RAC Membership	
		Hall Rental	$30.00
		Incorporation	
		Name Tags	$8.05
Total revenue	$175.50	Total Expenses	$995.78
		Year to Date Income	-$820.28
		Cash on Hand	$3,633.33