

Kilowatter

The voice of the KW Amateur Radio Club

April 2005

Since 1922

Kitchener-Waterloo Amateur Radio Club

133 Weber St. N. Suite #3-138;
Waterloo, Ontario
N2J 3G9

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Web site: <http://www.kwarc.org>

MONDAY'S MEETING

Date: Monday April 4th 2005
Time: 7:30pm
Place: RCAF Wing 404 Club. End of Dutton Dr. Waterloo. Off Weber St. N
Topic: Al MacDonald VA3TET, who is presently experimenting with an unusual HF antenna.

UPCOMING EVENTS

Peel Amateur Radio Club Mississauga Amateur Radio Club Saturday, April 9, 2005, Brampton ON	Whitby Amateur Radio Clubs #3 Annual Hamfest Whitby Amateur Radio Club Saturday, April 16, 2005, Oshawa ON
Durham Region Amateur Radio Hamfest North Shore ARC and South Pickering ARC Saturday, April 23, 2005, Whitby ON	Annual Spring Hamfest and Fleamarket The Skywide Amateur Radio Club Saturday, May 14, 2005, Toronto ON
2005 Wireless & Mobile WorldExpo May 18, 2005, Toronto ON	Central Ontario Hamfest & Fleamarket Guelph ARC & Kitchener Waterloo ARC Saturday, June 11, 2005, Fergus ON
Whitby Amateur Radio Club Hamfest Whitby Amateur Radio Club Saturday, June 18, 2005, Oshawa ON	Annual K.W.A.R.C. Field Day Doon Pioneer Village June 24th - 25th

KWARC Directors 2003-2004

President	Ben Sasiela	VE3ST	748-0445
Vice President	Gord Hayward	VE3EOS	744-7205
Past President	Bill Graham	VE3ETK	576-3578
Treasurer	Dave Schwartz	VA3DGS	884-3594
Secretary	Larry Gorman	VE3LGN	884-6782
Director	Tedd Doda	VE3TJD	634-5949
Director	Bob Pelling(Acting)	VE3XNB	895-9995

The Executive Committee Chairs

Program	Bill Riddell	VE3WFR	571-9875
Technical	Tedd Doda	VE3TJD	634-5949
Packet	Tedd Doda	VE3TJD	634-5949
Database Mgr	Dave Schwartz	VA3DGS	884-3594
Bulletin Editor	Dennis Tabbert	VA3DLT	463-9641
Edu. Co-Ord	Ron Gimbel	VE3DBD	584-2009
Chief Examiner	Vern Stroud	VE3RVS	743-9342
Auto Patch	Ben Sasiela	VE3ST	748-0445
ARES Manager	Larry Gorman	VE3LGN	884-6782
CANWARN Mgr.	Vacant		
QSL Manager	Gord Gibson	VE3NQG	893-5148
Inventory	Ben Sasiela	VE3ST	748-0445
Field Day	Bob Pelling	VE3XNB	895-9995
Webmaster	Dennis Tabbert	VA3DLT	463-9641
Bereavement	Marg Cassel	VE3RE	634-5139
Flea Market	Bob Pelling	VE3XNB	895-9995
QCWA Rep	Harold Braun	VE3DWH	884-2388

KWARC Owned Repeaters/Nodes

Mode	Call	Freq.	PL	patch	Location
Voice	VE3KSR	146.970	131.8	Yes	Baden Hill
Voice	VE3RCK	146.865	131.8	Yes	Mannheim
Packet	VE3KSR-0	145.010			Baden Hill
Packet	VE3KWQ	145.090			Waterloo
Voice	VE3IXY	224.340	131.8		Mannheim
IRLP	VE3RBM	444.875	131.8		Mannheim
Echolink	VE3SED	53.370	131.8		Baden Hill
Voice	VE3SED	442.200	131.8		Baden Hill
Special Events		147.510			Kitchener

Other Area Repeaters/Nodes

Mode	Call	Freq.	PL	patch	Location
Voice	VE3EUC	444.700	N		Elmira
Voice	VE3KFM	442.000		Y open	Kitchener
Voice	VE3RND	145.330		Y	Plattsville
Voice	VE3SWR	146.790		N	Cambridge
IRLP	VE3WFM	147.090		N	Waterloo
Voice	VE3WWW	146.835		N	U of W
Voice	VE3RSS	147.030		N members	Acton
ULR Link	VE3BHR	447.075		Y	Baden
Voice	VE3RKL	443.850		N	Guelph
Voice	VE3ZMG	145.210		N Open	Guelph
Packet	VE3VIQ	145.570			Guelph
TCP/IP	VE3MKY	145.570			Guelph
TCP/IP	VE3UOW	145.570			U of W B
Voice	VE3BAY	442.350		Y	Kitchener

[Kitchener Waterloo Amateur Radio Club Presidents Report](#)



Greeting to all KWARC Members

They say that April showers bring may flowers, in reality, April showers bring static crashes, lightning, flooding, and all that junk that was covered by snow that we have to clean up. Never the less, its that time of year when the days are longer, spring is here, and you wake up to millions of chirping birds that seem to like your dipole as a perch. Such is the way of the changing seasons. I for one enjoyed a brief trip to Florida this spring, basking in warm temperatures, and trying to keep my eyes off all the young scenery strolling down the beach. Life is tough I guess. In my article last month I indicated that the seldom used auto patch on our club repeater VE3KSR was costly and service was duplicated on our sister repeater VE3RCK. Effective March 30, the auto patch on VE3KSR will have been disconnected. Club mobile users of the auto patch still receive the same service that we provide on repeater VE3RCK. Again in looking at the operating costs of the club, our monthly Killowatter publication for those that choose to have it mailed to their homes, needed to be adjusted to compensate for increases in mailing costs and production. The executive committee unanimously endorsed to adjust the price of producing and mailing the Killowatter effective immediately. Of course, for those that are able to download it from our web site, the cost remains free. These adjustments will benefit all members by holding the line on membership fees, while still providing operating revenue for our meeting rentals, insurance costs, and club activities through out the year.

Three sponsored major club events are drawing near for everyone to enjoy, they are, Can warn Training, to be held on April 20 at the University of Waterloo, put on by E.C. and I encourage all members to attend this excellent presentation, even if you have

no intention of helping spot storms, its an fun night with valuable information and training, Next is the Annual Flea market co-sponsored by KWARC and Guelph. Always an enjoyable event, and a prime source of revenue for the club. And lastly, our Club Field day held again this year at the Doon Pioneer Crossroads. Our April club meeting will feature club member Al MacDonald VA3TET, who is presently experimenting with an unusual HF antenna, and he'll show us something new in design and efficiency. This is one meeting that must not be missed, rain or shine. Our thanks go out our March presenter, Fred Louwe VE3OQB for an excellent audio, visual presentation on alarm systems from yesteryear to today's modern circuitry. WE are in need of interesting articles from our club members for the Kilowatter. I don't mean letters of complaints, or accusations, but if you recently had a delightful experience in ham radio, perhaps a trip that you took, some far-a-way contacts you made, or projects that would be great reading to all members, we need you!!

I'm sure that we have oodles of stories that can be shared with other members, or perhaps technical questions that can be submitted for advise. This would be interesting to everyone in the club. If you wish to submit an article to be published in the Kilowatter, space permitting, please send them to the editor or myself by mail or e mail. ben.s@sympatico.ca All articles will be appreciated, and chosen for publication at the discretion of the editor. We have a limit on size due to mailing costs, so submissions should be no greater than two pages including pictures.

See you at the April 4th meeting for a really great show

Ben Sasiela
Pres KWARC
VE3ST

Gord Hayward V.P. And Membership Chairman



Hello All,

Its high time you heard from the 'quiet' member of the executive, the VP and membership person.

I'm a man of few words as some who talk on KSR have remarked, but I should try to fix that. As the membership person, one of the questions that comes up often is: Why do we need the club? Obviously the club needs us. Last month in his message, Bill mentioned some of the resources that the club makes available to us, both as members of the club and as amateurs in general: an array of repeaters, the web site, meeting presentations and club events. These are what your dues support.

More importantly to me, the club provides friendship, fellowship and mentoring. There has been considerable interest since the appearance of e-mail and the internet in tele-commuting. With this there were fears that this would lead to isolation, where the

tele-worker would stay cooped up and not leave the work station for long periods. Amateur radio has been a 'tele-community' for almost a century and we haven't proven this fear groundless. When we were out west on a family trip, we stopped at a mall in Thunder Bay for supplies. When Lynda came out of the store, she was surprised that the person who I had been chatting with on their repeater turned out to have been at the other end of the parking lot and had driven over to meet. The urge to meet face to face is strong.

The club is, therefore, more than an operator of repeaters and the provider of presentations. Rather than being voices at the other end of QSO's we meet, talk, exchange stories and ideas and have fun. This is why I need the club and I suspect that's why you do too.

Cheers, Gord.

CANWARN 20 APRIL - UNIVERSITY OF WATERLOO - 7PM

DAVIS BLDG ENGINEERING LECTURE THEATRE

THE ANNUAL CANWARN SEVERE WEATHER REFRESHER PRESENTATION BY WEATHER SPECIALISTS GEOFF COULSON AND SCOTT KEDDY OF THE ONTARIO WEATHER OFFICE OF ENVIRONMENT CANADA.

A NEW POWER POINT PRESENTATION WILL USE ACTUAL PHOTOS AND GRAPHICS TO DEMONSTRATE POTENTIAL WEATHER CONDITIONS FOR THE SPRING - SUMMER - FALL SEASONS.

THIS IS A MUST FOR ALL WEATHER BUFFS, AND ANYONE PLANNING TO BE OUT DOOR ACTIVITIES THIS SUMMER. PARTICIPATION THIS YEAR IS OPEN TO THE GENERAL PUBLIC. INFORM YOUR NON-AMATEUR FRIENDS.

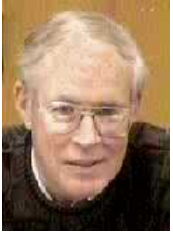
ALL ARE WELCOME. REFRESHMENTS WILL BE SERVED.

FREE PARKING AS PREVIOUSLY IN THE **B** PARKING LOT OFF PHILIP STREET. LOOK FOR THE BANNER. WE WILL HAVE VENTURE SCOUT ASSISTANCE, AND A TALK IN ON VE3KSR REPEATER. 146.970

AN INFORMATION LOOP PROGRAM WILL BE TRANSMITTED ON VE3KSR IN THE WEEK LEADING UP.

LARRY VE3LGN EMERGENCY SERVICES COORDINATOR

[KWARC -March 05 Club meeting](#)



... KWARC - General Meeting – 7 March, 2005

The meeting, held at Wing 404 – Dutton Drive, opened at 7:35 PM by President Ben VE3ST. 40 members and guests in attendance.

Major item of business – a request for a volunteer to complete an audit review of club accounts.

Bob Moyer VE3NXT stepped forward to handle this task.

The **feature presentation** was “A History of Alarm Communications” presented by Fred Louwe VE3 OQB

1-The future- is here A video illustrating a multi interfacing system for a host of home functions, from home thermostat setting, to opening the garage door.

11 –Historically - city wide Red Fire Alarm street boxes. Break the glass –crank the handle, a clock work mechanism sends an alarm pulse identifying box location.

Individual customer burglar systems followed. Using Bell phone lines.

All early systems (1952 to 1990) had clock springs which had to be wound. Battery powered systems gradually took over.

In all cases the alarm was answered by an operator at a central office. The appropriate agency was then notified by phoned.

111 -Currently: Dial up systems are still most common. Digital is now available via Bell lines. Cellular is only used for backup if Bell lines fail.

Internet is the latest technology, and will be the system of the future.

One day soon we will all have a Touch Pad box on the wall to manage a plethora of home functions.

.....

Post break – the draw winner was Wally VE3LCR.
Field Day –Bob VE3XNB chair .June25-26 @ Doon Heritage Crossroads again this year.

Ham Class Ron VE3DBD, Education Coordinator - Brochures are available to distribute at flea markets. Candidates can call Ron at 584-2009

QSL Bureau Gord Gibson VE3NQG

Any one doing DX asked to contact Gord KQUS “Round the World flight Control Station worked. QSL card on the way.

Tech Report Ted VE3TJD Late February VE3RNK from Hamilton checked out club repeater antennas. All are fine.

CANWARN: Larry VE3LGN

The annual severe weather presentation confirmed for 20 April At UoW engineering lecture theatre. All club members are invited. Come and bring your friends.

Net control group for managing the weather net will be reestablished in May. Ron Gravelle has retired. A successor will be selected.

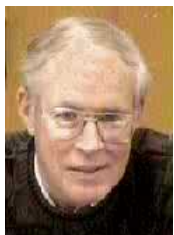
If you are interested in following weather events, check out www.hfradio.net for ARES/CANWARN information.

April meeting will feature Jim VE3 JMU and Al VE3TET with their unique 20 M antenna design.

Meeting adjourned 9:20 PM.

Minutes by club Secretary Larry VE3LGN

Executive Meeting for March 2005



KWARC EXECUTIVE MEETING – MARCH 9, 2005

Meeting opened at 7:35 pm
Ratz-Bechtel Hospitality Suite,
March 2005

Present: Ben VE3ST, Gord VE3EOS,
Dave VA3DGS, Bob VE3XNB,
Gord, VE3NQK, Larry VE3LGN. Regrets
Bill VE3WFR, Ted VE3TJD

Items of business

The future of the club Packet repeaters.

Parts of system are damaged –
Lightning hits etc

System is not heavily used (Because
it is inoperative??)

The costs associated with reviving
the system,
(TNC and battery) are unknown at this
time.

Gord VE3NQK manager of the club DX
bureau felt that the system should be
repaired as it is our source of DX
information.

He wanted to know what refurbishing
would cost. As Ted VE3TJD was not in
attendance the answer to that question
was not available.

Access to the DX cluster via Hamilton
VE3DTV-12 requires the packet system

Gord is willing to supply a radio with the
appropriate frequency/

It was mentioned that we have two
repeaters to access packet, VE3KWQ and
VE3KR

Do we need both?

Dave VA3DGS pointed out that VE3KWQ is
difficult to access at the Marsland bldg.
Perhaps parts could be used to fix
VE3KSR.

Dave went on to say that APRS is as
reliable as Packet at passing messages,
and can also produce print copy. We
have APRS at the Baden site, with a relay
repeater at Dave VA3DGS' site. But
APRS does not pick up DX cluster
information.

V.P. Gord VE3EOS suggested a need for
clarification. "Do we need a Packet
REPEATER", as opposed to "do we need
PACKET"?

Ben queried as to whether we could
bypass the Hamilton DX source and pick
up the original source of the VE3DTV DX
cluster information –and thus eliminate
this particular need for packet.

The discussion ended with the
questions.

Should the club support a
packet repeater on VE3KSR? Should it
support APRS? Should it support both
packet and APRS?

The issue is to be referred back to
the Tech Committee

Questions to answer include:

Do we keep the VE3KSR link to
VE3DTV –Hamilton?

What is the cost to fix the packet
BBS system?

Do we let the BBS die, and use this
equipment for other needs?

Are members interested in
maintaining local packet?

The Financial Review.

Treasurer Dave stated that Bob Moyer VE3NXT has already been in touch with him re a meeting to arrange for the review.

Ben questioned Dave re RAC Insurance availability –Should we investigate?

Dave responded: that our policy is not due for some time.

RAC Insurance is usually bundled with a personal liability policy to all members of a RAC affiliated club. RAC then charges the club for a joining fee for non members.

RAC provides liability only, not facility or equipment cover. Thus we would still need to obtain facility insurance coverage...

.At this point Ben suggested that we shelve this idea

Flea Market Web Site.

KWARCB has paid the full cost of the domain site since inception. This needs to be corrected as the flea market is a joint venture of KWARC-GARC.

Since the Flea Market is an incorporated entity, it should look after its domain costs.

Bob VE3XNB will to inform Mike –Hamfest-Flea Market manager that future bills will be made out to Central Ontario Hamfest and Flea Market Inc.

Newsletter Print Copy

Currently, members receiving the Kilowatt print copy pay \$5 annually. The actual cost is closer to \$11. Motion put by President Ben “That a new fee be established at \$8 per year for print copy. Seconded by Treasurer Dave.

Much discussion followed. This is considered to be a reasonable compromise and will be looked at again in the future. The new fee carried unanimously.

Kilowatt articles. All Exec and committees reminded to produce regular reports and submit to publisher regularly and in a timely fashion.

Phone Patch

- VE3KSR Phone patch –to be cancelled if no significant response by 15 March. VE3RCK phone patch will be maintained.

Open discussion. There were no outstanding concerns put forward.

Next club meeting -Monday 4 April. Exec Tuesday 5th. Both start at 7:30 PM.

Items for next months agenda:

A review of the membership fee structure.

Club membership milestones recognition

Meeting adjourned 9PM

Minutes by Club Secretary Larry VE3LGN

Last Months Presenter Fred VE3OQB



Mechanical alarm control sending unit.

Fred VE3OQB demonstrating vintage alarm equipment used for reporting fire or break-in. These units were connected directly to monitoring stations using telephone lines.



Program co-ordinator Bill VE3WFR presenting Fred VE3OQB with a certificate of appreciation for the evening talk on Vintage Alarm equipment. Fred displayed pictures of early days technology and video clips of most modern to-days advances



Member Wally, VE3LCR our 50/50 winner for the evening showing his winnings.



Preparing for Severe Weather Events

While winter just doesn't want to loosen its grip on the region...signs of Spring are all around us.

Our area typically sees its first severe weather events by the middle of April. That means it's time to gear up for another CANWARN season

In real-time, your CANWARN report is an important part of the forecasters' decision making process. Our ultimate goal at the Weather Service is warn you of every severe weather event that occurs while not issuing any warnings falsely (better known as "crying wolf"). Your reports add valuable information to what we see on satellite, receive in surface observations, and observe on radar. On behalf of the entire staff of the weather office, thanks, in advance, for your continued support of the CANWARN program.

WEATHER SAFETY

A review of some basic weather safety tips.

First, let's take a look at thunderstorm safety in general. People who are outdoors, especially under or near tall trees, in water or on hilltops are particularly at risk. Remember that if you can hear thunder then you are close enough to the storm to be hit by lightning! Lightning strikes result in about 90 deaths each year.

If caught outdoors in a storm, try to get to safe shelter as soon as you can. Move to a sturdy building or to a car. Do not take shelter in a small shed, under isolated trees, or in a convertible automobile. Get out of boats and away from water. If no shelter is available, find a low spot away from tall trees, fences or poles. Be sure though that the area you pick is not flood prone. A grove of short trees surrounded by tall ones is an alternative. If you feel your skin tingle or your hair stand on end, squat low to the ground on the balls of your feet. Place your hands on your knees with your head between them. Make yourself the smallest target possible, and minimize your contact with the ground. Telephone lines and metal pipes can conduct electricity. Unplug appliances...such as televisions, computers and amateur radio equipment. Be sure to unplug phone lines and TV cable lines as well. Even though skies are sunny overhead, remember that lightning can travel 7 to 10 miles away from the thunderstorm cloud. A good rule of thumb is the 30-30 rule. Count the seconds between seeing the lightning and hearing the thunder. If this time is 30 seconds or less then lightning is close enough to be a threat.

When it comes to tornadoes, people in cars and those in mobile homes are the most at risk. If you spot or tornado or hear of a tornado warning while in your home, move to a pre-designated shelter, such as a basement or interior room that has pipes or reinforced supports around it. If neither is available, get under a sturdy piece of furniture. Stay away from windows-as flying glass is a major contributor to injury and death with a tornado.

Get out of automobiles. Do not try to outrun a tornado with your car. Instead leave it immediately and seek a ditch. Mobile homes, even if tied down, offer little protection from tornadoes and should be abandoned.

REPORTING SEVERE WEATHER EVENTS

Remember when severe weather occurs, the Weather Service Is looking to receive reports of: Tornadoes- Funnel and Wall Clouds - Rotating Thunderstorms - Wind gusts in excess of 70km/45 mph - Hail (at least baby finger nail size) - Wind damage (downed trees and/or wires, structural damage to buildings, etc.) - Flooding (tributaries overflowing, flooded roads/basements) - Heavy rain (rate of 3cm/1 inch an hour or greater) - Power outages - Any weather related deaths or injuries

When reporting, remember to give- Time of occurrence- Event (Tornado, downed trees, etc)- Location of event (town or city and county)- Amateur Call (if applicable)

You can make a report in several ways

- Call us at our toll free number (provided at April Refresher course)
- Via amateur radio, if a CANWARN net has been activated

This message via the CANWARN e-net edited from the SKYWARN Spring Newsletter. :Larry VE3LGN Emergency Services Coordinator

Tech Report for April/2005



Greetings:

Last month, we had some visitors from the Hamilton and Niagara join us with their magnificent (read: expensive) RF equipment. With their help, all the antennas and radios were checked at the Baden Hill equipment building. This is something that should be done at least once every couple years.

I would like to thank Jon (VA3RQ), Rick (VE3RNK) and Jim (VE3WA) for spending their Sunday helping us with this daunting task!

The snow is melting fast, so hopefully in a few more days the tech committee will be able to change the receive ICOM for the Exec II repeater powering VE3RCK. What I've noticed over the last few weeks is that some users sound more "off frequency" than others. This leads me to believe that many users radios are off frequency as well. I have offered this in the past, but maybe it would be proper to try it again. If anyone thinks their radios are off frequency, I would be more than happy to bring a frequency counter or my service monitor to a club meeting so your radio can be checked. Send me an email if you would be interested in this.

Many of you know that I've moved my primary residence to Mannheim. Overall, it's a very nice place to live. Let me tell you though, it's the LOWEST part of

Waterloo County! I've asked permission from the better half (XYL) to start planting a 140 foot tower. Even a tower this high would barely get me to the crest of the "Trussler Road" hill. Luckily, I have a clear shot to Baden Hill, and our Mannheim site is only about 1/2 of a mile away, so HT coverage is excellent.

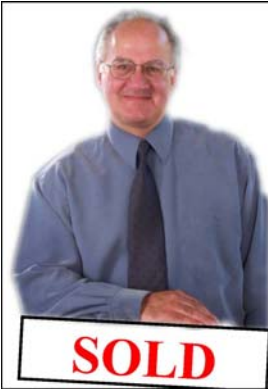
The tech committee will be removing all the packet equipment from Baden Hill to do an inventory of what equipment can be salvaged, and also what equipment would be necessary to get the system back up and running. The BBS, VA3SED will remain down. If anyone is interested in taking over the BBS, please contact me.

The VE3KWQ system is still working fine, but it doesn't have anything to talk to! KWQ use to link to the BBS, then could connect to KSR. What we will do is get KWQ to link directly to KSR allowing the low power users to still get to KSR. As far as I know, the DX cluster is still available near Hamilton (going through VE3DTV-12). Other than DTV, I don't know what else is out there for packet connectivity. Most have gone the way of the Dodo (NOT Doda) bird :)

That's it for this month,

Tedd, VE3TJD

Technical Chairman for the KWARC Inc.



"Your home is probably the most important investment and the single largest piece of equity you own. That's why I know you would want to deal with a person who puts your interests above all else. In dealing with changes in your Real Estate ownership, Buying, or Selling, call VA3MRJ for professional Real Estate service."

David Johnson, Sales Representative
Coldwell Banker Peter Benninger Realty
508 Riverbend Drive, Kitchener
742.5800 ext. 2169
David-Johnson@coldwellbanker.ca



[KWARC Membership Renewal](#)

Please cut out the following renewal form and enclose it with your payment as your renewal date comes due. When you enter the birthday information, just your month and day are needed.

PLEASE MAIL TO: Kitchener-Waterloo Amateur Radio Club 133 Weber Street North, Suite #3-138 Waterloo Ontario N2J 3G9		
First Name	Call:	Last Name:
Address1:		Address2:
City:	Postal Code:	Email Address:
Phone Number: () -		Birthday: Month Day
This is a [] RENEWAL or [] NEW APPLICATION		Kilowatter Preference [] MAIL [] From WEB
<input type="checkbox"/> Full Membership @ \$20.00 <input type="checkbox"/> Family membership adder @ \$5.00 <input type="checkbox"/> Seniors Membership @ \$10.00 <input type="checkbox"/> Student or Challenged individuals @ \$10.00		<input type="checkbox"/> Associate (non voting) @ \$10.00. I am a member of the _____ Club. <input type="checkbox"/> Printed Kilowatter Newsletter "Mailed" @ \$8.00
		Speed Dial number request: _____
Comments:		
Total Amount Enclosed: \$		Your Cheque Number :



INFORMATION GATEWAY SERVICES

Kitchener-Waterloo Cambridge and Guelph

Information Gateway Services
(Kitchener-Waterloo) Inc.
151 Frobisher Dr., Suite E-118,
Waterloo, Ontario, N2V 2C9

Owner Operator : Don Sinclair VE3ICD

Information Gateway Services (IGS) provides a complete range of Internet services ranging from entry level personal accounts for beginners, right up to the requirements of large commercial organizations.

SPECIAL OFFER TO KWARC MEMBERS

1. No activation fee on standard personal accounts for KWARC members. A **\$25.00** saving
2. \$50 per six months or \$75 per year paid in advance for 5 hours/month --- (extra hours at \$2.00 per hour).
OR \$15month \$150 year for 30 hours/month (this popular package has just been increased from 20 hrs)
3. N E W Now get **UNLIMITED FREE** time from midnight until 7am
4. One free KWARC e-mail address *urcall@kwarc.org* for KWARC members
No coupons or other discounts can be used in conjunction with these special offers to KWARC members ONLY.

For complete details, call Don Sinclair VE3ICD at 884-7200