CQ CQ DE VE3WE VE3WE CQ CQ DE VE3WE VE3WE CQ CQ DE VE3WE VE3WE

WAVELENGTH

OFFICIAL BULLETIN OF THE SCARBOROUGH AMATEUR RADIO CLUB INC.

June 2007 Volume 1 Issue 5

President: Bill Catlender VE3ILE
Tel: (416) 439-1891
Vice Pres. & Membership: Bernadine Dinnard-Williams VE3YDB
Tel: (416) 750-9885 x 231
Past Pres. Audrey Little VA3YD
(647) 436-8190
Secretary: Ray Chow VE3ZXC
(416) 443-6230
Treasurer: Lambert Philadelphia
VE3LYP (416) 750-4727
Communications & Field Day: Bob Chrysler
VE3IEL (416) 264-2872
Education: Nick Blacklock VE3EBC
(416) 406-2478
Archives: Gord Hogarth VE3CNA
(416) 266-6734
Elmer: Tony Fegan VE3QF
Security: Gord Gault VE3UFF
(416) 447-2285

LEARN

PARTICIPATE

ENJOY

SARC Nets:

Sunday: 28.730 MHz.
CW 10:00 AM
SSB 10:30 AM

Tuesday: 147.060 MHz.

Thursday: 28.730 MHz.
SSB 07:00 PM

Everyone is invited to check in on CW before the nets start.

These are open nets. All licensed Hams are always welcome. Come and join us.
We also want to emphasize that 28.730 MHz. is our calling frequency. Please monitor and/or call your friends.

ARRAY OF NEW GEAR DEBUTS AT DAYTON 2007

It's always a treat to get your first look at a new HF transceiver at Dayton. This year, there were no fewer than six to drool over. Here, in alphabetical order, is a rundown:

Elecraft **http://www.elecraft.com/**> announced its new K3 HF and 6 meter transceiver. It includes many upgrade options, so many, in fact, that you can configure anything from a kit-built 10 W portable QRP radio to a full-featured, contest-ready 100 W rig with *two* high-performance receivers. It is scheduled to ship starting in July.

FlexRadio Systems <**http://www.flex-radio.com/**>, a pioneer in high-performance software defined radios (SDRs), introduced its Flex-5000 HF plus 6-meter transceiver series that promises higher performance and more features than its earlier model. Included are the Flex-5000C, a fully integrated system in a single box, and the Flex-5000D, which includes a second receiver.

Hilberling, the first Amateur Radio transceiver maker from across the Atlantic for some years, announced its PT-8000 transceiver. It's offered as a full-featured HF and VHF transceiver available in 10, 100 or 600 W versions. The North America distributor is Array Solutions <**http://www.arraysolutions.com/**>.

ICOM <**http://www.icomamerica.com/**> unveiled its IC-7700 HF + 6 meter transceiver. It appears to be a single-receiver version of its top-tier IC-7800, sharing the 200 W transmitter, high performance receiver and 7-inch display of its sibling. Contesters are the market target, but the IC-7700 may be of interest to anyone who covets the features of the IC-7800 but doesn't need two receivers or the higher price tag.

Ten-Tec <**http://www.tentec.com/**> has its new Omni-VII HF + 6 meter transceiver on display. The unit's "distributed roofing filter architecture" promises ham-band-only receive performance with a general coverage receiver. Stay tuned for the "Product Review" in July QST.

Finally, Yaesu <**http://www.yaesu.com/**> showed its new FT-450 HF + 6 meter offering. The FT-450 bears some similarities to the Yaesu FT-2000, but with fewer features and a correspondingly lower price.

What else?

Array Solutions is distributing the SPE Expert 1K-FA solid-state linear amplifier. It is a compact light weight (44 pounds) fully automated, full break-in capable amplifier that puts out 1000 W PEP on 160 through 10 meters (700 W PEP on 6 meters). It has an internal 120 or 240 V ac power supply and antenna tuner.

Dishtronix <**http://www.dishtronix.com/**> showed off its 100% duty cycle, 1500 W output (on all modes) solid-state linear. This is a "serious" amplifier at 65 pounds with the choice of a separate 120 pound linear power supply or a 54 pound switcher.

Tokyo Hy-Power <**http://www.thp.co.jp/**> enjoyed a great debut at Dayton this year, showing three HF amplifiers newly introduced to the US market. On display were the HL-1.2KFX 750 W output, HL-1.5KFX 1 kW output and HL-2.5KFX legal limit amplifiers as well as the HL-500V 2 meter linear. All are solid state. THP also offers a new legal-limit automatic antenna tuner.

Kenwood <**http://www.kenwood.com/**> announced a new V/UHF mobile transceiver, the TM-71A. Of particular note is free software that allows downloading repeater data from ARRL's Travel Plus <**http://www.arrl.org/catalog/?item=9930** > directly into radio memories. It also can function as a crossband repeater.

Yaesu introduced a new V/UHF transceiver especially for hams on the go! The FTM-10 is designed to mount on the handlebars of your bike or motorcycle so that you don't even need a mic! Just talk into the front panel, and you're on the air!

Radio accessories are always popular at Dayton and MFJ can always be counted on to have new products. Topping the list this year is the MFJ-998 1500 W Intellituner. This legal-limit auto tuner is designed to handle loads from 12 to 1600 ohms from 160 to 10 meters and includes two outputs and sophisticated memory, protection and control features.

1. West Mountain Radio <**http://www.westmountainradio.com/**>, the RigBlaster and RigRunner folk, have branched out into the audio side of your radios. They introduced a DSP-equipped speaker designed for the HF operator who would like more signal and less noise.

Palstar <**http://www.palstar.com/**> has a new AT1KP tuner that covers 160 through 6 meters. By switching in the 160 meter inductance only when needed, the AT1KP reduces the minimum capacitance of the tuner so it can cover 6 meters.

WANTED

BP-22 battery pack fo9r ICOM IC-u2AT.
Please contact Bert VE3OBU at
ve3obu@rac.ca or call (416) 283-4444

FOR SALE

Palstar AT1500CV Antenna tuiner
1 year old. Original price $699.00
Asking $ 325.00 Sharp.

ve3ile@rac.ca or call (416) 439-1891

SARC FIELD DAY 2007

This year, as in the past, SARC FIELD DAY is being held at Bruce's Mills Conservation area near Stouffville. Most SARC members know where this location is; and, how to get there. A map is attached to this file, in case you might be a newcomer to Field Day, and not know exactly where Bruce's Mills is located. There is a farmers gate off Warden Avenue that gives free access to the field area that we shall be using. A SARC sign shall be at this gate. This year the area is Dobie Flats. We have used this area in the past. It is south of the soccer fields. As in the past we are allowed to park our cars near our site if we wish. It would, however, be wise to park our cars in a nearby parking area once they are unloaded. This gives more room for antenna ropes. Also who wants to drive over steel pegs accidentally? We have Friday night to set up tents and do some preparatory work, if anyone wishes to do so. Saturday 23rd of June, and Sunday 24th of June, are the dates for ARRL Field Day.

Band Leaders are responsible for arranging all the details for their site. What is needed are tents, radio equipment, tables to put the equipment on, lights so that work can be done at night, antennas, feed-lines, ropes, pegs or stakes to hold tents and guy ropes. It should be settled as to who is to provide a laptop or computer for logging. Each operator should be familiar with the logging program to be used. Monday June 11th, appropriate logging programs shall be demonstrated at the club meeting room.

Extra paper is also handy to jot down missed contacts that might be found later; but, you know they are on the air. Bring lots of water preferably in a cooler. Bring food for the Saturday pot luck, and food for yourselves.

Bring also a cheerie, helpful attitude. Field Day is tough. Lets make it as much fun as possible. Don't forget, in the daytime it will be hot. In the night it often gets quite cold. Bring appropriate clothing. Never lose sight of the safety issue. Do not do, or allow anything that is unsafe. A first-aid kit at each site is a good idea for band-aids, sun lotion, tweezers for slivers, and sizzors.

Cell phones, FRS/GMRS equipment is allowed, for personal use. Two metre equipment for talk-in on VE3RPT, also helpful.

If you don't have garbage bags, get some from the Field Day Coordinator. We shall leave the site in the same good order as we found it.

Submit your final logs to the Field Day Coordinator, in Cabrillo format. This may be done on a disk or by e-mail at a convenient time.

Lets have a great Field Day, one that we shall be proud of.

PS. Don't forget your cameras.

Yours, Bob VE3IEL..73.

The modern receiver

The improvements in ham equipment, especially in the last few years with the advent of sharper roofing filters, inspired me to compile a table of test data out of the QST Product Reviews from the popular and venerable TS-940S till todays Rolls Royce, the ICOM IC-7800. To make the presentation simpler, I limited the data to those measured for 20 m. The noise floor (sensitivity) readings were omitted as all the listed equipment were in the range of -133 to -141 dBm, more than adequate for any practical operations. The remaining 3 items, Blocking Dynamic Range, 3rd-order Intermodulation Dynamic Range and 3rd-order Intercept are the other essential factors that determine a receivers signal handling ability.

As shown in the table, the Blocking Dynamic Range, BDR, figure states how many dB over the noise floor an interfering signal (at the shown spacing from the desired signal, say 20 kHz) has to be to cause a 1dB drop, blocking, in the audio output. If the noise floor is at -140 dBm and the BDR 125 dB, the interfering signal would be at -15 dBm.
Translated into common terms, the usual S-meter setting for S9 is at -73 dBm (50 microvolts for a 50 ohm system). A -15 dBm signal level would then be S9+58 dB or about 50 millivolts, a very strong signal but possible from a nearby station.

The nonlinearity of receiver mixers causes the next major problem, the near-in 3-rd order intermodulation distortion, 3OIMD. All mixers have products beyond the usual signal frequency +/- the local oscillator.
If nearby signals are very strong the undesired products can be heard.
Most troublesome is the combination of one nearby signal and the second harmonic of another nearby signal, called the third order response. These signals can be outside your listening passband but generate an interfering signal right on top of the one to which you are tuned. Normally the bands are not that crowded but during contests and in DX pilups the situation occurs frequently.

By definition, distortion occurs when the interfering IMD signal exceeds the receiver noise level by 3 dB. For example, if the two outside signals causing this are at the -45 dBm level, the 3OIMD dynamic range is the difference between the noise floor and the IMD measured level, or 140-45 = 95 dB, an average figure.

A by-product of the 3OIMD measurements is the 3-rd order intercept point, TOI, a theoretical level where the IF outputs by the mixer from the desired signal and from the interfering IMD signal are equal.
In practice this would have happened at such high signal levels, however, that mixer compression and signal distortion had occurred.
The 3OIRP is published as a figure of merit

to indicate a receiver's strong signal handling capability, the higher dBm figure, the better.

Most transceivers that include a general coverage receiver use a first mixer that can handle large signals with minimum distortion followed immediately by a roofing filter. The first IF:s are in the VHF region and the roofing filter has a 15 or 20 kHz bandwidth to accommodate the various signal modes to be processed further downstream. Narrow roofing filters at theses frequencies have not been available until a few years ago. QST reported in February of 2005 an experiment at the ARRL lab where 4 kHz wide roofing filters were installed in two Yaesu transceivers replacing the original 12 kHz stock units (see the table). The improvement in both BDR and 3OIDM is considerable, showing the contribution by the narrower roofing filters, especially for close-in interfering signals. Incidentally, both transceivers' noise floor figure improved by several dB after the modification.

The radio manufacturers have been quick to respond to this development. The ICOM IC-756PROIII is probably the last of the "great" tranceivers not to have a narrow roofing filter option. With the exception of the ICOM IC-7000, a portable, all major tranceivers reported in 2006 and 2007 have a choice of swiching between several filters, the narrowest 3 kHz or better.

This has also resulted in some spectacular performance for measurements with very close-in interfering signals at 5 and 2 kHz from the desired frequency.

It has been interesting to review the improvements in ham receivers over the last 20 years. Unfortunately, the review data before 2004 had less information for close-in interfering signals. My admiration for the old TS-940S still stands, a transceiver way ahead of its time in 1986.
Installing a 4 kHz roofing filter from International Radio in my own Mark V was easy and made the set much quieter. And it sure helped when working pileups when the DX called "listening 5 up". (The table is not included because of space limitations - Available on request from VE3ILE or VE3OBU)

73 Jan K6FM

o-o-o-o-o-o-o-o-o-o

HELLO WORLD

A life in Ham radio

By Danny Gregory and Paul Sahre

This very worthwhile book is about a particular ham named Jerry Powell. Jerry was an avid ham radio operator from 1928 until his death in 2000. His call sign was W2OJW. He was on the DXCC honor roll and the book shows all of his QSL cards with description of the places he worked.

The subtitle is very appropriate. I

received a copy of the book from my grandson's girlfriend for my birthday and had a hard time putting it down.

Available from Coles ISBN 1-56898-281-X

List price $24.95

I am not lending out my copy!!!!!

Bill, VE3ILE

THE AMATEUR'S CODE

The radio amateur is:

CONSIDERATE

never knowingly operates in such a way as to lessen the pleasures of others.

LOYAL

offers loyalty, encouragement, and support to other amateurs, local clubs, and the Radio Amateurs of Canada, through which Amateur Radio in Canada is represented nationally and internationally.

PROGRESSIVE

with knowledge abreast of science, a well built and efficient station, and operation above reproach.

FRIENDLY

slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation, and consideration for the interest of others. These are the hallmarks of the amateur spirits.

BALANCED

radio is an avocation, never interfering with duties owed to family, job, school, or community.

PATRIOTIC

station and skill always ready for service to country and community.

The original Amateur's Code was written by Paul M. Segal, W9EEA in 1928

(Most, if not all still valid today. ve3ile)

SOLAR UPDATE

Tad "There's a Little Black Spot on the Sun Today" Cook, K7RA, Western North Carolina, this week, reports:

After five days of no sunspots from May 24-28, spots returned on May 29, and have increased since in number and size. There are currently several sunspots visible, and the sunspot number for the past five days (Sunday through Thursday) was 58, 58, 63, 47 and 59. Coupled with quiet and stable geomagnetic indicators, this is good for HF propagation. Our reporting week for this bulletin (the numbers reported at the end) runs from Thursday through Wednesday, and the average daily sunspot number for May 31 to June 6 rose nearly 43 points to 46.1 when compared to the prior seven days. Average daily solar flux rose nearly 15 points to 83.7.

Last week the latest projection looked like no sunspots around Field Day with a declining geomagnetic disturbance, but this week the forecast looks a little better. Including the Friday before (the event doesn't begin until Saturday) the projected solar flux last week for June 22-24 was 65 for all three days, with a planetary A index of 20, 12 and 5. This week's prediction for those dates shows the same A index, but a solar flux 10 points higher, at 75 for all three days.

DX NEWS

NIGERIA, 5N. Marek, SQ8JCA is QRV as 5N2/SQ8JCA from Cogi for the rest of June. Activity is on 80 to 6 meters using SSB between 1000 and 1600z. QSL to home call.

RWANDA, 9X. Vlad, UA4WHX is QRV as 9X0VB from Kigali. He is active on 160 to 10 meters using CW and SSB. His length of stay is unknown. QSL to home call.

BAHRAIN, A9. Juma, A92GT has been active on 15 meters around 1800z. QSL via EA7FTR.

HONG KONG, VR. To commemorate the 10th anniversary of Hong Kong's reunification with China, the Special Administrative Region of China authorizes Hong Kong stations to use the special call sign prefix VR10 from July 1, 2007 to June 30, 2008.

INDONESIA, YB. Hotang, YC0IEM is QRV as YC0IEM/9 from Lombok, IOTA OC-150, until June 10. QSL via IZ8CCW.

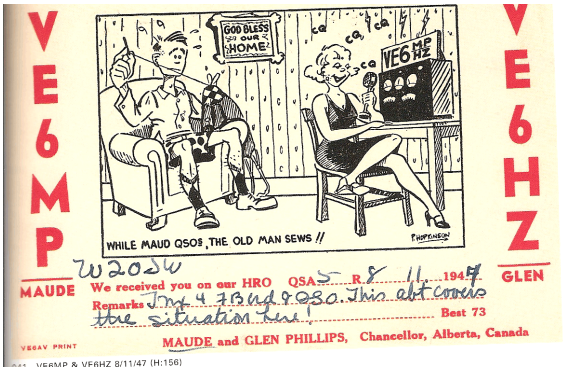
UNITED KINGDOM SOVEREIGN BASE AREAS ON CYPRUS, ZC4. Steve, ZC4LI has been QRV on 30 meters between 1830 and 2100z.

UPCOMING EVENTS

June 11 - Last regular meeting before summer break. Field day preparation with presentation/demonstration of logging program.

June 23/24 - We will be able to get to the field day site on Friday afternoon. 4 stations will be on the air. Listen for VE3WE - A4.

Aug 25 - SARC picnic at the QTH of VE3ILE. You will have to register in advance!! Location: 2 Norwalk St. Scarborough.



Now that was an XYL