

JUNE 1992

FEEDBACK

THE OFFICIAL NEWSLETTER OF THE
GEORGIAN BAY AMATEUR RADIO CLUB

Sponsoring

VE3OSR FM REPEATER 146.94- Mhz

VE3OST PACKET DIGIPEATER AND NODE 145.01 145.63 Mhz

GBARC

The Georgian Bay Amateur Radio Club, founded in 1973, is based in Grey and Bruce counties. The club meets at 7:30 P.M. sharp on the second Monday of each month, except July and August, in the O.S.C.V.I staff cafeteria. The club operates a 2 metre FM repeater, VE3OSR, on 146.940 - located at Woodford. The club also operates VE3OST, packet digipeater and node on 145.010 and 145.630, located just east of Owen Sound at the Maclean Hunter site.

NET SCHEDULE

Sunday 09:30 hrs 3.783 Mhz

CLUB OFFICERS

President _____ VE3XOX Bob Vary
Vice-President _____ VE3IJD Gene McDonald
Sec-Treasurer _____ VE3HIP Ian Trenholm
Technical-Director _____ VE3PCK Carl Styan
Program-Director _____ Vacant
Bulletin Editor _____ VE3TSA Tom St.Amand

FEEDBACK

The official bulletin of the Georgian Bay Amateur radio club, published monthly, except July and August. Contributions of articles/letters are encouraged and should be sent to Tom St.Amand, VE3TSA, 1232 3rd Ave. East, Owen Sound, Ont. N4K2L5

DUES

\$20.00 per year due by 31 DEC

MEMBERSHIP

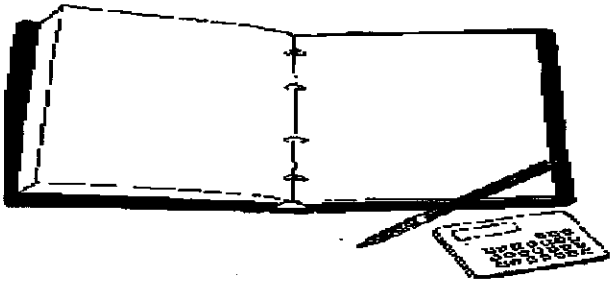
VE3AEO TED	VE3MTV NORM
VE3AUB JACK	VE3NEM TOM
VE3BFV JIM	VE3PCK CARL
VE3BIS DICK	VE3RHJ BRAD
VE3BZC ROSS	VE3RLW ROB
VE3CC CY	VE3RSV RALPH
VE3CRV JIM	VE3TFQ JIM
VE3CUV ROSS	VE3TFV KEN
VE3DIQ BILL	VE3TSA TOM
VE3DKF JIM	VE3TTV HENRY
VE3DTS JACK	VE3TUM RICK
VE3DXO DAVE	VE3TUP KLASS
VE3EBM ROY	VE3TUQ AUBREY
VE3FFN WALTER	VE3TUS BARRIE
VE3HIO RICK	VE3TWI OKKE
VE3HIP IAN	VE3TWJ DAVE
VE3HMZ BILL	VE3TWK JACK
VE3HXX IAN	VE3TWL CATHY
VE3IEV JOHN	VE3TXB JOHN
VE3IJD GENE	VE3UIC JASON
VE3IOD GARY	VE3VTO DON
VE3IXR MURRAY	VE3WNW BILL
VE3JUO DON	VE3WWS VIHLO
VE3LKD BOB	VE3XOX BOB
VE3LPD LAVERNE	SWL STAN
VE3LPT MOE	SWL DAN
VE3MTG LARRY	

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FOR SALE

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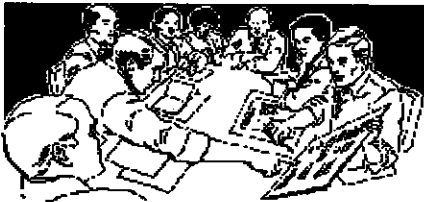
NEXT GBARC MEETING SEPT 14
FIELD DAY 27th-28th JUNE
BREAKFAST MEETINGS:
JUNE 13th AND 27th
JULY 11th AND 25th
AUGUST 8th AND 29th



EMMISSIONS FROM THE PRIME MODULATOR

HELLO EVERY ONEMY FIRST LETTER AS PRESIDENT OF THE GEORGIAN BAY AMATEUR RADIO CLUB. WELL SUMMER IS ON US NOW, THE WEATHER IS WARMING UP, THE DAY LIGHT IS GETTING LONGER, AS WELL AS THE JOB LISTS. WE ARE FINDING LOTS TO DO AND AS WELL AS TRYING TO KEEP UP WITH ALL THE NEWS AROUND US. WITH NO CLUB MEETING IN THE SUMMER MONTHS, WE WILL HAVE TO KEEP TRACK OF EACH OTHER VIA THE RADIOS. FIELD DAY IS AROUND THE CORNER [JUNE 27TH AND 28TH] ,SO I HOPE TO SEE YOU AND AS MANY PEOPLE AT OUR FEILD

DAY SITE AS POSSIBLE. OH BY THE WAY, WE WOULD LIKE TO THANK CY COLE VE3CC FOR THE USE OF HIS CALL FOR THE GEORGIAN BAY AMATEUR RADIO FIELD DAY. AS YOU CAN SEE I AM NOT VERY GOOD AT WRITING LETTERS. SO IN SOME CASES YOU MIGHT HAVE TO READ BETWEEN THE LINES TO MAKE ANY SENSE OUT OF THIS. I THINK IF THERE IS A PROBLEM FOR YOU IN THE TRANSORTATION END OF GETTING TO THE FIELD DAY SITE, PLEASE FELL FREE TO ASK FOR HELP. THERE WILL BE MEMBERS WILLING TO DRIVE YOU TO AND FROM THE SITE. JUST LOOKING BACK OVER MY LETTER, I SEE A COUPLE SPELLING MISTAKES. AND SINCE THIS LETTER HAS BEEN SENT BY PACKET, THE MISTAKES HAVE GONE TOO. ANY WAY AS I SAID BEFORE LETTER WRITING IS NOT THE BEST. I WOULD LIKE TO THANK YOU ALL FOR BEING THERE AS A CLUB , AND I AM SURE IM SURE THE CLUB WILL CONTINUE TO GROW AND PROSPER IN THE YEARS TO COME. IT IS THE CLUB MEMBERS AS A GROUP [PAST AND PRESENT] THAT HAS MADE THE CLUB WHAT IT IS TODAY . I WOULD TO THANK TOM VE3TSA FOR THE FINE JOB HE HAS DONE FOR THE CLUB AS PRESIDENT FOR THE PAST COUPLE YEARS. BYE FOR NOW...73 BOB VE3XOX



MINUTES OF THE LAST GBARC MEETING

Minutes of Meeting of May 11, 1992 Meeting opened at 7:45 P.M. by President Tom TSA with 24 members and 3 guests present. The Minutes of April 13th meeting, moved by Cy CC; seconded by Norm MTV. Carried as written. This being meeting night for the election of the club executive, Tom TSA asked for a member to volunteer to stand for nomination of

Program Director. No names were presented at this time. Reported by Tom TSA, the Orange Hall could be available for our Club meetings starting in Sept. for the amount of \$40.00 per night. Bill HMZ agreed to inquire at the Billy Bishop Regional Airport to see if we could use the new building, east of Owen Sound, for our meetings.

Club members were reminded of the meeting of June 8th, the last one for the summer will be held at Alexis Restaurant at 6:30 P.M. and will be a dinner meeting. Those members wishing to attend the meeting only, and not the dinner, the business part of the meeting will start at 7:30 P.M. Jim TFQ will confirm arrangements with the restaurant, and advise Ian, HIP of details.

Field day held at Jerry's FYA's farm the last week end of June, 27 and 28, starting at 2:00 pm Sat. and ending at 2:00 pm Sunday. Tom TSA will put details, map and questionnaire in May issue of Feedback. Moved by Norm MTV, seconded by Henry TTV the club will rent a johnny-on-the-spot for field day week-end Carried. HIP to follow up Cy, CC agreed that the club use his call Ve3CC for field day.

Discussion on by-law changes, and collection of club dues. Some clubs have financial year starting Sept. 1 rather than Jan. 1, feeling that members could pay easier at that time of year. General feeling of GBARC

MINUTES CONTINUED

members that \$25.00 per year, reduced to \$20.00 per year if paid by Dec. 31st, would be reasonable fee. Tom TSA and Norm MTV to get together for final wording of the by-laws.

The new executive agreed to arrange purchase of the large club trophy, and the small "keeper" trophy, to be presented to the GBRAC member of the year.

Norm MTV chaired the meeting for election of club officers for the 92-93 season. Ballots were passed out and newly elected were: President: Bob, XOX Vice " : Gene, IJD Sec/Treas: Ian, HIP Bulletin ed: Tom TSA Tech. Dir.: Carl, PCK Office of Program Director still open.

Newly elected president Bob XOX suggested that the executive get together for a review before the next club meeting. He will be in touch, regarding place and time. Club treasury stand at \$1,150.84 as of May 15/92. \$23.00 was realized from the 50/50 draw. Jack DTS adjourned the meeting.

GEORGIAN BAY AMATEUR RADIO CLUB- OWEN SOUND, ONT.

Meeting of executive and others, May 20th, 1992 at Billy Bishop Regional Airport, Owen Sound, Ont.

Members and other present were:

Bob XOX, Gene IJD, Ian HIP, Jim CRV, Don IDS, Carl PCK, Rick HIO, Tom TSA, Henry TTV, Ken TFV.

Main purpose of meeting was explained by Bob, XOX. As Jim CRV owns the repeater at the Woodford site, much discussion was heard on moving or installing another repeater, using the club call Ve3OSR, and the club have full ownership.

Jim CRV reinstated that the repeater has been offered to the club to use "in perpetually" however he insists ownership will remain with him. The reason for this is as the club revolves between being active and dormant through the years, Jim will insure that the repeater will always remain active, regardless of the club involvement. Cost of insurance and liability would be additional cost to the club if and when a new site is selected.

After much discussion, pro and con, Gene IJD made a motion 2nd by Tom TSA that the GBARC Replace 34/94 repeater with their own equipment.

The motion was defeated by a count of 7 against, 2 for. Post discussion was that the repeater cost to the club was minimal, and has been very reliable over the years. Rick HIO and Carl PCK will individually work on setting up links to OSR, and feeling of most members present this is the way to go, with the club owning and purchasing some of the hub equipment when all is in place.

Meeting adjourned by Tom TSA.

CRRL BULLETIN # 4

MAY 08, 1992 FROM CRRL HEADQUARTERS LONDON ON
MAY 08, 1992 TO ALL CRRL LIFE MEMBERS SOURCE DANA
SHTUN VE3DSS CRRL PRESIDENT

FRATERNAL GREETINGS FROM CRRL HEADQUARTERS. AS YOUR NEW PRESIDENT, I WILL BE WORKING HARD TO MAINTAIN THE MANY "LEAGUE" TRADITIONS DEVELOPED OVER THE LAST 72 YEARS, AND TO KEEP AMATEUR RADIO GROWING.

I ALSO HOPE THAT WE WILL SEE THE BIRTH OF A UNIFIED NATIONAL AMATEUR ORGANIZATION DURING CANADA'S 125 TH YEAR !

I HAVE BEEN A PART OF THE COMMITTEE TASKED TO DO THIS, WITH GEORGE SPENCER VE3AGS AND HARRY MACLEAN VE3GRO AND FRANCIS SALTER, VE3FRS, GEORGE SANSOM VE3GWS AND CLAY BANNISTER VE3LYN OF CARF. THE COMMITTEE COMPLETED ITS WORKS LAST OCTOBER, AFTER DRAFTING A CONSTITUTION AND MAKING PRELIMINARY RECOMMENDATIONS FOR THE STRUCTURE OF THE ORGANIZATION. THE REST OF THE HAS BEEN PASSED TO THE IMPLEMENTATION TEAM, COMPOSED OF

OUR RESPECTIVE EXECUTIVE, AND I ASSURE YOU THAT WORK IS ON-GOING.

IN ADDITION TO THAT GOOD NEWS, I AM ALSO WRITING TO ADVISE YOU THAT WE HAVE PRODUCED AND ENCLOSED, AS REQUESTED BY MANY OF YOU, A "CRRL LIFE MEMBER" CERTIFICATE. THIS CERTIFICATE IS OUR WAY OF HONORING YOUR LONG TERM COMMITMENT TO CRRL AND OUR COMMITMENT TO YOU FOR THE FUTURE.

ALSO PLEASE DON'T FORGET THAT WHILE THE MONEY YOU PAID FOR "LIFE MEMBERSHIP" IS HELD IN TRUST BY ARRL, ADMINISTRATION AND SERVICES ARE HANDLED BY CRRL. IF YOU HAVE A CHANGE OF CALL OR CHANGE OF ADDRESS AT ANY TIME, PLEASE NOTIFY CRRL IMMEDIATELY, AS WE COORDINATE THE MAILING OF QST. FOR YOUR INFORMATION PLEASE FIND ENCLOSED WITH YOUR CERTIFICATE, A SAMPLING OF THE SERVICES OFFERED TO YOU AS A "FULL VOTING MEMBER" OF CRRL.

IF YOU HAVE ANY CONCERNS OR QUESTIONS PLEASE FEEL FREE TO DROP ME A LINE, I WOULD BE GLAD TO HEAR FROM YOU.

THE CANADIAN RADIO RELAY LEAGUE AR

CRRL Board Meeting

The CRRL Board met at Mississauga, Ontario on Saturday and Sunday, May 2nd and 3rd 1992.

President Bruce Balla VE2QO announced his decision to resign his office at the conclusion of the board meeting.

The Board reluctantly accepted his decision and expressed its thanks for the work he has done on behalf of Canadian amateurs and CRRL in the past three years.

In accordance with the bylaws, First Vice President Dana Shtun VE3DSS will assume the office of President for the remainder of his term.

Tim Ellam VE6SH was elected to succeed Dana as First Vice President

The draft CRRL/CARF merger contract was reviewed in detail and it appears to be essentially complete with one or two items that require clarification.

The Board reaffirmed its support for the creation of RAC and gave the President the authority to sign the contract as soon as these issues have been clarified.

A meeting of the CRRL/CARF Implementation Team is scheduled for May 24 to iron out the wrinkles .

Minutes of the meeting will be published in QST CANADA.

David Fancy VE7EWI

Pacific Director, CRRL

CARF/CRRL JOINT BULLETIN RE MERGER I

From: VE3DSS DANA SHTUN

ON SUNDAY, MAY 24, 1992, THE IMPLEMENTATION TEAMS OF CRRL AND CARF MET IN TORONTO TO CONTINUE MERGER DISCUSSIONS.

A LEGAL CONTRACT BETWEEN THE TWO ORGANIZATIONS WAS SIGNED BY PRESIDENTS SHTUN AND HOPWOOD AND SECRETARIES ILLOTT AND LOUCKS.

THIS CONTRACT WILL ALLOW THE LEGAL PROCESS OF CREATING "RADIO AMATEURS OF CANADA" "RADIO AMATEURS DU CANADA" AND THE DISSOLUTION OF CARF AND CRRL TO BEGIN.

A VOTE OF ALL MEMBERS OF THE TWO ORGANIZATIONS WILL TAKE PLACE IN THE UPCOMING MONTHS, AS WILL THE INCORPORATION OF RAC BY THE LEGAL REPRESENTATIVES. ANNOUNCEMENT OF THE FIRST BOARD OF DIRECTORS WILL BE RELEASED AFTER THE RESULTS OF THE MEMBERS VOTE.

THE ACTUAL DATE OF MERGER IS DEPENDENT ON GOVERNMENTAL AND REVENUE CANADA REQUIREMENTS, AND IS NOT AVAILABLE AT THIS TIME.

SIGNED

DANA A. SHTUN J. FARRELL HOPWOOD PRESIDENT CRRL PRESIDENT CARF

MAY 24, 1992 22:05 UTC

GEOSTATIONARY ORBITERS

Geostationary Questions by GM4IHJ 24 May 92

In the last few months, I have received a number of questions about Geostationary satellites - the satellites which orbit approx 36000 kms above the Equator and , by virtue of their 24 hour orbit period, appear to stay in the same place in the sky relative to a terrestrial user. Q1. What geostationary satellites can I see. You can if you have a good telescope and a clear night sky, see any geosat whose equatorial longitude is within about 72 degrees east or west of the longitude of your location. Eg at 4 degs west longitude GM4IHJ can see geosats stationed between 68 east and 76 west. Q2. What geosats can I receive ? This question provokes a different answer to Q1 above, because you can only receive geosats above your horizon IF THEY ARE POINTING THEIR NARROW SPOT BEAM ANTENNA AT YOU. The footprint or spot covered by the geosats antenna is quite precise , so that no power is wasted outside the wanted service area. A TV sat like Astra covers UK and Western Europe, but though Arabsat may be above your horizon , its antenna is not pointing at you. Some geosats use a spot beam and a wide angle hemisphere beam but the power level in the hemisphere beam is much reduced and you need a big dish to receive it (Eg Russian Gorizont). In other cases the spot beam is manoeuvrable as in NASAs TDRSS Tactical Data Relay which is used to communicate to and from the Space Shuttle. So you only hear TDRSS when it is pointing at a Shuttle or a Landsat near you. Q3. Are geosats really fixed ? POSITIVELY NOT . There are three main reasons why not. Firstly the gravitational field above the Earth is not the same everywhere around the Equator. Over the Atlantic the geosat behaves as if it were on a hill. It is constantly rolling slowly down the hill west or east and its controllers must use thrusters to keep pushing it back on station. By contrast geosats over the Indian Ocean behave as if they were in a hole. Once there they need no fuel to stay there. So the Indian ocean slot is where most old satellites are sent to die. The second factor disturbing geosats is Solar gravity. In our summer the Sun is above Latitude 23 pulling the geosat north. In our winter the Sun goes down to latitude 23 South pulling the geosat southward. Again this has to be corrected by use of thrusters and fuel. The Sun's effect is relatively easy to predict but that of the third body in the system - the MOON , is not so easy. Being much closer to Earth and moving over a wider arc than the Sun, it has considerable effect on each geosat's position. All geosats start with at least 80 Kg of thruster fuel. A good satellite controller can keep a geosat within half a degree of station for ten years, but in some awkward cases the fuel runs out long before this. At which point if no fuel is left the " no longer geosat" drifts slowly around the Equator sometimes coming to a halt in the Indian Ocean or the Pacific "gravity hole", But modern practise is to use the very last bit of fuel to raise the sats orbit slightly , so that it gets well clear of the crowded geostationary belt.

One area of misunderstanding about geosats is signal polarisation. Astra for example uses alternate vertical and horizontal linear polarisation on adjacent channels. This allows closer channel spacing without mutual interference. BUT - signals leaving Astra are not H or V with respect to the Equator. Astra's service area is around 50 degs latitude north. So vertical transmissions leaving Astra tilt 50 degs from Astra's vertical. If you go for DX on the fringe of a geosats service area , you must expect to receive polarisation which is not vertical or horizontal to you. Each geosat will be different because of its displacement relative to you.. For this reason

constantly variable motor driven polarisers which can be turned to any angle are preferred to magnetically switched two position 90 deg only shift polarisers. Equally noteworthy if you receive a transmission from a geosat using a hemisphere broad beam antenna, you again must expect to adjust your reception polarisation well away from vertical and horizontal. Another problem geosat DXers face is that geosats near their horizon have a lengthy signal path through the lower atmosphere. This results in atmospheric refraction bending the signal

GEOSATS CON'T

path. Sometimes you get it sometimes you do not. A similar condition limits geosat usage to non polar latitudes. Surface ducting common in cold climates can seriously affect stations anywhere above latitude 66 degs. Anyone who monitors a TV geosat soon discovers that not all its signals produce pictures. Using a receiver such as an ICOM R7000 in place of or in parallel with your 900 to 1750 Mhz first IF receiver, you can easily pick out the broadband TV sigs even when coded, but you may also find digital telemetry signals usually at least one at each end of the geosats overall bandwidth ie lower edge channel one , upper edge channel 16. These are legitimate beacons and or two way control channels up and down through which the ground controllers monitor and change as necessary , the sats functions and housekeeping. Geosats exist in a very harsh environment. The Earth's magnetic field is crushed inwards on the sunward side. So over 24 hours the geosat can go from reasonable protection, from the solar wind at night, when it is in earth shadow and inside the magnetic field - to full daylight outside the magnetic field exposed to the full fury of the solar wind. Several early geosats built up massive electric charges which caused local lightning on the geosat, with disastrous results. Hence close monitoring of geosat telemetry is vital if it is to be kept in good health - even to shutting it down temporarily during big solar storms. HOWEVER - don't just look for legitimate telemetry. You may detect other signals , not just at band edges but also tucked into the edges of central channels. These are pirates. It started when the Gorizont TVsat feeding Cuba, stopped putting out signal when its feed from Mosco One ceased at Russian midnight. Enterprising gents west and east of the sat found they could up link signals into the vacant space and get hemisphere relay. Today most geosats have security checks, but as far as I know , no one has yet prevented the pirates from "say" uplinking a digi signal into Astra type sats on the edge of an operational TV channel , and using the sat as a relay to an office half way across Europe, at no cost except roughly 10K sterling for the dishes ,receiver and single channel TWT uplink. 73 John GM4IHJ @ GB7SAN



The illustrious attendees of the May 8th breakfast meeting. Tom TSA seen presenting Jack N5ZIK with a complimentary copy of Feedback. Front row L-R, Ross BZC, Klass TUP, Ian HXX. Standing L-R Henry TTV, Tom TSA, Jack N5ZIK, Jack DTS, Barrie TUS, Ross CLV. Photo by John TXB

DX NEWS

DX Bulletin 29 May 29, 1992 To all radio amateurs

Thanks to Tedd, KB8NW, and the Ohio/Penn DX Packet Cluster Network for the following DX information.

PAKISTAN. John, AP/WA2WYR, can usually be found on the low end of 20 around 0100z. Look for him in the CQ WPX CW Contest this coming weekend. His stay is until August and some RTTY is planned. QSL via KK6TX, 1992 CBA only.

AP2MC has been active on 14206 kHz around 0130z.

BOTSWANA. Dave, aka 9L1US, is now signing A22MN. Check 28469 kHz around 1300z and 21327 kHz around 1600z on weekends. QSL via WA8JOC.

SOMALIA. Kent, WB8HWO, will be active as T53UN for about two months. He is a regular on the 14256 DX Net at about 0100z. QSL to Kent Phillips, Box 1642, Nicosia, Cyprus.

CRETE Listen for Geoff, SV9/W0CG, between May 30 and June 12. Activity will be on 10, 15 and 20 meter CW and SSB. QSL to KQ8M.

CORSICA. Dieter, DF4RD, will be on Corse Island until June 8, with most activity being CW. He also plans to be on during the RSGB Field Day June 6 and 7.

CHAD. Henri, F6BAZ, is signing TT8ZH and will be active through the end of June. Check 18135 and 24940 kHz between 0800 and 0900z. QSLs go via FF6KSE.

RWANDA. Michel, F1MXQ, and formerly J28NU, will be active as 9X5KM for two months beginning early in June. He will concentrate on CW.

COMOROS. The four Germans of recent Glorioso fame are headed for D6.

SAINT KITTS. Craig, WB7RFA, will be in the CQ WPX CW Contest as either V47ITU or V40X.

ALBANIA RECIPROCAL OPERATING LICENSING NEWS. According to laws passed in January, the National Radiocommunications Commission issues licenses. Licenses for foreign radio amateurs are issued for a period of three months, and cannot be renewed during the same year. Foreign licensees will sign ZA/ their home call, for example, ZA/K5UR.

The General Directorate of the Albanian PTT is preparing a packet of laws that include amateur radio communications. In the future, the proper telecommunication authorities will issue all licenses.

License applications must be sent to the Albanian Radioamateur Association, AARA, PO Box 66, Tirana. AARA will handle the necessary procedures for obtaining the license from the Commission.

AFGHANISTAN. On May 27 the DXCC Desk announced that the recent OK1AI/YA operation has been accredited for DXCC purposes. Cards for this operation will be accepted for DXCC credit.

WARC BAND PACKET CLUSTER SPOTS.

30 meters.

TM5CHA 10104 kHz at 0642z

4J1FS 10105/0641

ZL1BM 10106/0637

3B8CF 10103/0347

17 meters.

HC2AQ 18147 kHz at 0310z

RE92C 18155/0308

ZL2BO 18082/0302

UA4PY 18080/0301

HH2PK 18125/0258

UW9WT 18873/0249

FK8FS/50 18071/0235

VR6BX 18136/0235

RTTY DX. For the uninitiated, CW and SSB are not the only modes that you can catch DX on HF with. The following were recently reeled in using the various TTY modes.

6W1QB, 6W6JX, 6Y5YZ, 9K2KA, 9M8ZZ, A42KB, A71CD, A92FG, AP2KS, C21NP, CN8NP, EA9MY, FR/DJ3OS, FR4EC, H44AP, H44JS, HL9EQ, RO4OA, T77T, V51P, VQ9YA, VR6WH, VU2SJV, YB5OZ, YN1CB, Z21HJ, Z21MJ and ZD7GF.

**SWITCH
TO SAFETY!**



short bits

CANADA DAY SPECIAL EVENT STATION

On July 1, 1992 a group of amateur radio operators will be running a special event station CJ3RTD MARINE MOBILE from the Hamilton bay. A certificate will be available.

This station is to celebrate the 125th birthday of Canada, and the marine mobile is in the recognition of the great lakes and the importance of them forming Canada.

The station will operate from 00:01 July 1 1992 to 23:59 July 1 1992 E.S.T on all H.F. bands starting with 75 meters , with the 3905 Century Club (3903.5).

A fine looking certificate will be available upon receipt of a QSL card & 8 1/2 X 11 envelope and \$1.00 US dollar (to cover mailing) to 89 Crooks Street, Hamilton, Ontario, Canada L8R-2Z8 .

More information can be obtained by contacting Rick VE3RPS at (416)383-2321 or Ken VE3KTR (416)527-6196. Also you can obtain more info on repeater VE3RTD at 442.625 + 5MHz with a PL tone of 131.8 . Guest are welcomed to attend and H.F. operators are still required.

INTERNATIONAL CONTEST CALENDAR -
92/05/30 Issued by CARF Pacific Region Office
- VE7VCA Canadian Amateur Radio Federation

CONTEST CALENDAR 1992 -----
 May 30-31 CQ WW WPX CW Contest
 Jun 6-7 RSGB Field Day
 Jun 13-15 ARRL June VHF QSO Party
 Jun 20-21 All Asian DX CW Contest
 Jun 27-28 ARRL Field Day
 JULY 1 **** CANADA DAY CONTEST ****
 July 4-5 Venezuela SSB DX Contest
 July 11-12 IARU HF World Championship
 July 11-12 CW WW VHF WPX Contest
 July 18 Columbia Independence Day
 July 18-19 Barcelona '92 Olympics HF
 July 25-26 Venezuela CW DX Contest
 Aug 1-2 YO DX Contest
 Aug 8-9 Maryland/D.C. QSO Party
 Aug 8-9 Worked All Europe CW Contest

Aug 15-16 New Jersey QSO Party
 Aug 15-16 SARTG RTTY Contest
 Sept 5-6 Bulgarian DX Contest
 Sept 5-6 All Asian DX SSB Contest
 Sept 6 North American CW Sprint
 Sept 13 North American SSB Sprint
 Sept 26-27 CQ WW RTTY Contest
 Oct 24-25 CQ WW SSB DX Contest
 DEC 27 **** CANADA WINER CONTEST ****

Courtesy John Dorr K1AR and CQ Magazine and The Canadian Amateur Magazine.

FOR CONTEST DETAILS --- CONSULT "CQ" or "The Canadian Amateur"

FIELD DAY, OWEN SOUND

HERE ARE A LIST OF THINGS THAT WE NEED:

- EXTENSION CORDS
- POWER BARS
- LENGTHS OF COAX WITH CONNECTORS
- LENGTHS OF ROPE
- TABLES -TARPS
- TENTS -PICNIC TYPE IF POSSIBLE, MUST BE BIG
- LANTERNS
- 12 VOLT BATTERIES (CAR,BOAT OR RV)
- GASOLINE DONATIONS FOR USE IN THE GENERATORS

WE ARE PLANNING TO HAVE A BEEF BBQ DURING THE WEEKEND, BOB IS GOING TO GET THE BEEF. SO WE NEED A COUPLE OF BBQS. THIS LIST IS THINGS, THAT IF GUYS HAVE, THEY SHOULD BRING WITH THEM. THESE ARE OUR MOST DEFINITE NEEDS. WE ARE PRETTY WELL COVERED ON THE RIGS AND THE ANTENNAS. IF PEOPLE WISH THEY CAN BRING THEIR CAMPERS OUT FRIDAY NIGHT AND SET THEM UP IF THEY WISH. WE WILL BE RUNNING FOUR OR FIVE STATIONS (DEPENDING ON BAND CONDITIONS) SO THATS EVERYTHING FOR NOW, IF YOU HAVE ANY QUESTIONS JUST ASK... THE MAIN POINT IS BRING WHAT YOU CAN.... 73'S AND THANKS...KEN 371-1456

FM REPEATER ACTIVE ON AO-21

AMSAT NEWS SERVICE BULLETIN MAY 30, 1992

AO-21/RS-14 Now In Experimental FM Voice Repeater Mode

AMSAT-DL announced that it has turned on the experimental FM voice repeater aboard AMSAT-OSCAR 21 (also known as RS-14). The uplink frequency is 435.016 MHz and the downlink is 145.987 MHz, both plus/minus Doppler shift. The FM repeater is enabled during the first four minutes of each ten-minute period, e.g., from 00:00 to 00:04, then from 00:10 to 00:14, etc., with the remaining six minutes used for telemetry and data transmission.

Through the AO-21 FM repeater Ray (W2RS) had a solid three-way QSO with Bob (W5GEL) in Corpus Christi, TX, and Derrell (W50H) in St. Paul, MN, and also heard N2AAM working W50H before the repeater switched off at 13:54 UTC on May 25th.

AO-21/RS-14, a joint project of AMSAT-DL and AMSAT-U ORBITA, was launched into a 600 mile polar orbit in 1991 as an experiment aboard a Russian GEOS research spacecraft. It carries two linear transponders for SSB/CW use (435.022-435.102 MHz uplink/145.932-145.852 MHz downlink and 435.043-435.123 MHz uplink/145.946-145.866 MHz downlink) and a RUDAK packet radio data transponder which shares uplink and downlink frequencies with the FM voice experiment. RUDAK cannot be accessed with standard amateur packet stations but requires specialized equipment similar to that used for capturing AO-13 telemetry, i.e., using 400 baud PSK demodulation. Since AO-21 is primarily a developmental spacecraft and thus the transponders in operation are scheduled to change their modes frequently. Scheduled changes are announced by AMSAT-DL over the packet network and digital satellites when they are made. AMSAT-NA carries Keplerian data for AO-21 and repeats the AMSAT-DL schedule announcements, as they are received, over the AMSAT News Service (ANS) which are carried on most US packet BBSs.

[The AMSAT News Service (ANS) would like to thank Ray Soifer (W2RS) for the information which went into this bulletin item.]

KEPS FOR AO-21 FOR THOSE WITH COMPUTER TRACKING PROGRAMS

Satellite: AO-21 Catalog number: 21087

Epoch time: 92128.58221308

Element set: 401

Inclination: 82.9456 deg

RA of node: 352.9774 deg

Eccentricity: 0.0037045

Arg of perigee: 72.0108 deg

Mean anomaly: 288.5085 deg

Mean motion: 13.74482925 rev/day

Decay rate: $1.12e-06$ rev/day²

Epoch rev: 6372

Checksum: 298



BOB XOX PICTURED HERE TAKING OVER AS PRESIDENT
OF THE GEORGIAN BAY AMATEUR RADIO CLUB FROM
TOM TSA PHOTO BY TXB

Field Day Rules

FEEDBACK

MAY 1992

1) **Eligibility:** Field Day is open competitively to all amateurs in the ARRL/CRRL Field Organization (plus Yukon and NWT). Foreign stations may be contacted for credit, but are not eligible to compete.

2) **Object:** To work as many stations as possible on any or all amateur bands (except 10 MHz) and, in doing so, to learn to operate in abnormal situations under less-than-optimum conditions. A premium is placed on skills and equipment developed to meet the challenge of emergency preparedness and to acquaint the public with the capabilities of Amateur Radio.

3) **Dates:** June 27-28, 1992.

4) **Field Day Period:** From 1800 UTC Saturday until 2100 UTC Sunday. Class A and Class B (see below) stations that do not begin setting up until 1800 UTC Saturday may operate the entire Field Day period of 27 hours. Others must begin their set up no earlier than 1800 UTC Friday, and may operate no more than 24 consecutive hours; ie, once on-the-air Field Day operation has started, it must end 24 hours from that point.

5) **Entry Categories:** Field Day entries are classified according to the maximum number of simultaneous transmitted signals, followed by the designation of the nature of the individual or group participation. Below 30 MHz, once a transmitter is used for a contact on a band, it must remain on that band for at least 15 minutes. During this 15-minute period, the transmitter is considered to be transmitting a signal, whether it is or not, for the purpose of determining transmitter class. Switching devices prohibited.

(Class A) Club/nonclub portable: Club groups (or nonclub groups with three or more licensed amateurs) set up specifically for Field Day. Such stations must be located in places that are not regular station locations, and must use no facilities installed for permanent station use, nor any structures installed permanently for Field Day use. Stations must be operated under one call sign (except when the Novice/Technician position is used) and under the control of a single licensee or trustee for each entry. All equipment (including antennas) must lie within a circle whose diameter does not exceed 300 meters (1000 feet). All contacts must be made with transmitter(s) and receiver(s) operating independent of commercial mains. Entrants who, for one reason or another, operate a transmitter or receiver from commercial mains for one or more contacts will be listed separately at the end of their class.

Any Class A group whose entry classification is two or more transmitters (non-Novice) may also use one Novice/Technician operating position (Novice bands only) without changing its basic entry classification. For Field Day purposes only, any Canadian amateur licensee, who has been licensed for less than six months prior to Field Day, shall be considered a "Novice" to provide a means for Canadian Field Day Class A stations with two or more transmitters to participate with a "Novice/Technician" operating position. This "Canadian Novice station" is restricted to the US Novice subbands and power/mode restrictions as well as to the restrictions of the operator's license. The Novice/Technician

Send for Your Field Day Package

Send to ARRL HQ a 9- x 12-inch self-addressed envelope with four units of First-Class US postage or four IRCs for the official Field Day Entry Package. This package includes 1 Publicity Kit, 1 Field Day Summary Sheet, 1 large dupe sheet with instructions and a checklist to ensure that your entry is complete. If you require more dupe sheets, indicate so in your request and affix one additional unit of First-Class postage to your SASE for each two additional dupe sheets requested.

station (including antennas) should be set up and operated by Novice and Technician licensees and should use the call sign of one of the Novice/Technician operators.

(Class A—Battery) Club/nonclub portable: Club groups (or nonclub groups with three or more licensed amateurs) set up specifically for Field Day and all contacts are made using an output power of five watts or less and the power source is other than commercial mains or motor-driven generator (eg, batteries, solar cells, water-driven generators). Other provisions are the same as for class A.

(Class B) One- or two-person portable: Nonclub stations set up and operated by not more than two licensed amateurs will be placed in Class B. Other provisions are the same as for Class A. One- and two-person Class B entries will be listed separately in the results.

(Class B—Battery) One- or two-person portable: Nonclub stations set up and operated by not more than two licensed amateurs and all contacts are made using an output power of five watts or less and the power source is other than commercial mains or motor-driven generator (eg, batteries, solar cells, water-driven generators). Other provisions are the same as for Class A. One- and two-person Class B-Battery entries will be listed separately in the results.

(Class C) Mobile: Stations in vehicles capable of operating while in motion and normally operated in this manner, including antenna. This includes maritime and aeronautical mobiles.

(Class D) Home stations: Stations operating from permanent or licensed station locations using commercial power. Class D stations may count contacts only with Class A, B, C and E Field Day groups for points.

(Class E) Home stations—emergency

W1AW Field Day Bulletin Schedule

In addition to the regular schedule detailed on page 86 of April QST, extra CW bulletins will be run at 1400 UTC (10 AM EDT), and extra phone bulletins at 1500 UTC (11 AM EDT) Saturday and Sunday mornings.

power: Same as Class D, but using emergency power for transmitters and receivers. Work stations in Classes A, B, C, D and E.

6) **Exchange:** Stations in any ARRL/CRRL Section will exchange their Field Day operating class and ARRL/CRRL Section (see page 8 in any QST). For example, if your club group was planning to operate in the three-transmitter, Class A category from Missouri, you would send "3A Missouri." Foreign stations send RS(T) and QTH.

7) **Miscellaneous Rules:**

A) Operators participating in Field Day may not, from any other station, contact for point credit the Field Day portable station of a group with which they participated.

B) A station used to contact one or more Field Day stations may not subsequently be used under any other call sign during the Field Day period. Family stations are exempted.

C) Each phone and each CW segment is considered a separate band. All voice communication contacts are equivalent, and packet/RTTY/ASCII/AMTOR is counted as CW. A station may be worked once on each band. Crossband contacts are not allowed. The use of more than one transmitter at the same time on a single band is prohibited, except that a Novice/Technician position may operate on any Novice band segment at any time. No repeater contacts.

8) **Scoring:** Scores are based on the number of valid contact points times the multiplier corresponding to the highest power used at any time during the Field Day period, plus bonus points. Phone contacts count one point each, and CW contacts count two points each. **Power multipliers:** If all contacts are made using an output power of 5 W or less and if a power source other than commercial mains or motor-driven generator is used (eg, batteries, solar cells, water-driven generators), multiply by 5. If any or all contacts are made using an output power of 150 W or less, multiply by 2. Multiply by 1 if any or all contacts are made using an output power of more than 150 watts. Batteries may be charged while in use for Class C entries only. For other classes, batteries charged during the Field Day period must be charged from a power source independent of the commercial mains.

A) **Bonus points:** The following bonus points will be added to the score (after the multiplier is applied) to determine the final score. Only Class A and B stations are eligible for bonuses. Just check the box on the Field Day summary sheet to indicate that you qualify for the bonus, and attach the necessary proof.

1) **100% emergency power:** 100 points per transmitter for 100% emergency power. All equipment and facilities at the Field Day site must be operated from a source independent of the commercial mains. Example: A club operating 3A, using 100% emergency power may claim 300 bonus points.

2) **Public relations:**

A) 100 points for media publicity. Publicity must be obtained or a bona fide attempt to obtain publicity must be made. Evidence must be submitted in the form of a newspaper clipping, a memo from a BC/TV station stating that publicity was given or a copy of the material that was sent to

the news media for publicity purposes.

B) 100 points for physically locating in a public place (eg, shopping center, parks, etc) with significant access by the public. The intent here is for Amateur Radio to be on display to the public.

C) An additional 100 points can be earned by such display stations in public places actively conducting an information booth for the visiting public, and dispensing information handouts, maintaining visitor's log, etc, as an information/recruiting tool for Amateur Radio. Evidence submitted for (B) and (C) may consist of copies of handouts, visitor's log, brief report on activities conducted, photos, etc.

3) **Message origination:** 100 points for origination of a message by the club president or other Field Day leader, addressed to the SM or SEC, stating the club name (or non-club group), number of operators, field location and number of ARES members participating. The message must be transmitted during the Field Day period, and a fully serviced copy of it must be in standard ARRL message form or no credit will be given.

4) **Message relay:** 10 points for each message received and relayed during the Field Day period, up to a maximum of 100 points. Copies of each message, properly serviced, must be included with the Field Day report.

5) **Satellite QSO:** 100 points can be earned by completing at least one QSO via satellite during the Field Day period. The repeater provision of Rule 7C is waived for satellite QSOs. A satellite station (one) does not count as an additional transmitter. On the summary sheet, show satellite QSOs as a separate "band."

6) **Natural Power:** Field Day groups making a minimum of five QSOs without using power from commercial mains or petroleum derivatives can earn 100 points. Intuitively, this means an "alternate" energy source of power such as solar, wind, methane or grain alcohol. This includes batteries charged by natural means (not dry cells). The natural-power station counts as an additional transmitter. If you do not wish to change your entry class, take one of your other transmitters off the air while making the natural-power QSOs. A separate list of natural-power QSOs should be enclosed with your entry.

7) **W1AW message:** A bonus of 100 points will be earned by copying a special ARRL Field Day bulletin sent over W1AW on its regularly announced frequencies just before and during Field Day. This message can be received directly from W1AW or by any relay method. An accurate copy of the received message should be included in your Field Day report.

8) **Packet Radio:** 100 points can be earned by completing at least one QSO on packet radio during the Field Day period. The repeater provision of Rule 7C is waived for packet radio QSOs. A packet station (one) does not count as an additional transmitter. On the summary sheet, show packet radio QSOs as a separate "band."

9) **Reporting:** Entries must be postmarked by July 28, 1992. No late entries can be accepted. A complete entry consists of an official ARRL summary sheet (or reasonable facsimile) and a list of stations worked on each band/mode during Field Day, plus bonus proof. The list of stations worked on

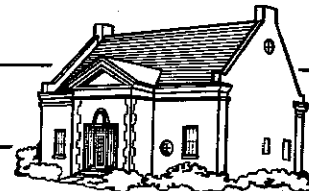
each band or mode may take the form of official ARRL dupe sheets or an alphanumeric listing of call signs worked per band and mode. This list may be computer-generated. Incomplete or illegible entries will be classified as checklogs. A copy of Field Day logs should be kept by your Field Day group, but should not be sent in unless specifically

requested later by the ARRL.

10) **Condition of Entry:** Each entrant agrees to be bound by the provisions, as well as the intent, of this announcement, the regulations of his or her licensing authority and the decisions of the ARRL Awards Committee.

11) **Disqualifications:** See January 1992 QST, page 108. QST

W1AW Schedule



April 5-October 25, 1992

MTWThFSSn = Days of Week

Dy = Daily

W1AW code practice and bulletin transmissions are sent on the following schedule:

UTC	Slow Code Practice	MWF: 0200, 2300; WF: 1300; TThSSn: 2000; Sn: 0200
	Fast Code Practice	MWF: 2000; TTh: 0200, 1300; TThSSn: 2300; S: 0200
	CW Bulletins	Dy: 0000, 0300, 2100; TWThF: 1400
	Teleprinter Bulletins	Dy: 0100, 0400, 2200; TWThF: 1500
	Voice Bulletins	Dy: 0145, 0445
EDT	Slow Code Practice	WF: 9 AM; MWF: 7 PM; TThSSn: 4 PM, 10 PM
	Fast Code Practice	MWF: 4 PM, 10 PM; TTh: 9 AM; TThSSn: 7 PM
	CW Bulletins	Dy: 5 PM, 8 PM, 11 PM; TWThF: 10 AM
	Teleprinter Bulletins	Dy: 6 PM, 9 PM, 12 AM; TWThF: 11 AM
	Voice Bulletins	Dy: 9:45 PM, 12:45 AM
CDT	Slow Code Practice	WF: 8 AM; MWF: 6 PM; TThSSn: 3 PM, 9 PM
	Fast Code Practice	MWF: 3 PM, 9 PM; TTh: 8 AM; TThSSn: 6 PM
	CW Bulletins	Dy: 4 PM, 7 PM, 10 PM; TWThF: 9 AM
	Teleprinter Bulletins	Dy: 5 PM, 8 PM, 11 PM; TWThF: 10 AM
	Voice Bulletins	Dy: 8:45 PM, 11:45 PM
MDT	Slow Code Practice	WF: 7 AM; MWF: 5 PM; TThSSn: 2 PM, 8 PM
	Fast Code Practice	MWF: 2 PM, 8 PM; TTh: 7 AM; TThSSn: 5 PM
	CW Bulletins	Dy: 3 PM, 6 PM, 9 PM; TWThF: 8 AM
	Teleprinter Bulletins	Dy: 4 PM, 7 PM, 10 PM; TWThF: 9 AM
	Voice Bulletins	Dy: 7:45 PM, 10:45 PM
PDT	Slow Code Practice	WF: 6 AM; MWF: 4 PM; TThSSn: 1 PM, 7 PM
	Fast Code Practice	MWF: 1 PM, 7 PM; TTh: 6 AM; TThSSn: 4 PM
	CW Bulletins	Dy: 2 PM, 5 PM, 8 PM; TWThF: 7 AM
	Teleprinter Bulletins	Dy: 3 PM, 6 PM, 9 PM; TWThF: 8 AM
	Voice Bulletins	Dy: 6:45 PM, 9:45 PM

Code practice, Qualifying Run and CW bulletin frequencies: 1.818, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675, 147.555 MHz.

Teleprinter bulletin frequencies: 3.625, 7.095, 14.095, 18.1025, 21.095, 28.095, 147.555 MHz.

Voice bulletin frequencies: 3.99, 7.29, 14.29, 18.16, 21.39, 28.59, 147.555 MHz.

Slow code practice is at 5, 7½, 10, 13 and 15 WPM.

Fast code practice is at 35, 30, 25, 20, 15, 13 and 10 WPM.

Code practice texts are from QST, and the source of each practice is given at the beginning of each practice and at the beginning of alternate speeds. For example, "Text is from May 1992 QST, pages 9 and 81" indicates that the main text is from the article on page 9 and the mixed number/letter groups at the end of each speed are from page 81.

On Fridays, UTC, a DX bulletin replaces the regular bulletin transmissions.

On Tuesdays and Saturdays at 2230 UTC, Keplerian Elements for active amateur satellites will be sent on the regular teleprinter frequencies.

Teleprinter bulletins are 45.45-baud Baudot and 100-baud AMTOR, FEC Mode B. 110-baud ASCII will be sent as time allows.

CW bulletins are sent at 18 WPM.

W1AW is open for visitors Monday through Friday from 9 AM to 11 PM EDT and on Saturday and Sunday from 4:30 PM to 11 PM EDT.

W1AW is available for operation by visitors between 1 and 4 PM Monday through Friday. If you desire to operate W1AW, be sure to bring a copy of your license with you.

In a communications emergency, monitor W1AW for special bulletins as follows: voice on the hour, teleprinter at 15 minutes past the hour, and CW on the half hour.

W1AW will be closed on May 25 and July 3.

PETTYGSH2

GEORGIAN BAY AMATEUR RADIO CLUB - OWEN SOUND, ONT.

DRAFT
FOR COPY
TSA

WATERDAM1

Minutes of meeting May 11th ,1992.

Action Meeting opened at 7:45 p.m. by President Tom TSA. with 24 members
By: and 3 guests present.
Minutes of Apr.13th meeting, moved by Cy ,CC ; seconded by Norm, MTV.
Carried as written.

HMZ

This being meeting night for election of club executive, Tom TSA asked for a member to volunteer to stand for nomination of program director.No names were presented at this time.
Reported by Tom, TSA the Orange Hall could be available for our club meetings, starting in Sept. for the amount of \$ 40.00 per night.
Bill HMZ agreed to inquire at the Billy Bishop Regional Airport to see if we could use the new building ,east of Owen Sound,for our meetings.

TFQ

Club members were reminded meeting of June 8th,last one for the summer will be held at Alexis Restaurant at 6:30 P.M. and will be a dinner meeting . Those members wishing to attend the meeting only , and not the dinner, the business part of the meeting will start at 7:30 P.M. Jim, TFQ will confirm arrangements with the restaurant,and advise Ian,HIP of details.

TSA

Field day held at Jerry's FYA 's farm the last week end of June, 27,28;starting at 2:00 pm Sat. and ending Sun. 2:00 p.m. Tom, TSA will put details ,map and questionnaire in May issue of Feedback.

HIP

Moved by Norm MTV, seconded by Henry TTV the club rent a johnny-on-the-spot for field day week-end. Carried. HIP to follow up. Cy, CC agreed that the club use his call Ve3CC for field day.

TSA

Discussion on by-law changes, and collection of club dues.
Some clubs have financial year starting Sept. 1 rather than Jan. 1, feeling that members could pay easier at that time of year.

MTV

General feeling of GBARC members that \$ 25.00 per year, reduced to \$ 20.00 per year if paid by Dec. 31st ,would be reasonable fee. Tom TSA and Norm MTV to get together for final wording of the by-laws.

new

exec.

The new executive agreed to arrange purchase of the large club trophy, and the small "keeper" trophy , to be presented to the GBARC member of the year.

Norm MTV chaired the meeting for election of club officers for the 92-93 season. Ballots were passed out and newly elected were:

- President : Bob, XOX
- Vice " : Gene , IJD
- Sec/Treas : Ian , HIP
- Bulletin Ed: Tom, TSA
- Tech.Dir. : Carl, PCK

Office of Program Director still open.

XOX

Newly elected president Bob XOX suggested that the executive get together for a review before the next club meeting. He will be in touch, regarding place and time.

Club treasury stands at \$ 1,150.84 as of May 15,92. \$ 23.00 was realized from the 50/50 draw. Jack DTS adjourned the meeting.

GEORGIAN BAY AMATEUR RADIO CLUB - OWEN SOUND, ONT.

Meeting of executive & others , May 20th,1992. at
Billy Bishop Regional Airport ,Owen Sound,Ont.

Members and others present were:

Bob XOX, Gene IJD, Ian HIP, Jim CRV, Don IDS, Carl PCK, Rick HIO, Tom TSA,
Henry TTV, Ken TFV.

Main purpose of meeting was explained by Bob, XOX.
As Jim CRV owns the repeater at the Woodford site, much discussion
was heard on moving or installing another repeater ,using the club
call Ve3OSR, and the club have full ownership.

Jim CRV reinstated that the repeater has been offered to the club to
use " in perpetually " ,however he insists ownership will remain with
him. The reason for this is as the club revolves between being active
and dormant through the years , Jim will insure that the repeater
will always remain active, regardless of club involvement.
Cost of insurance and liability would be additional cost to the club
if and when a new site is selected.

After much discussion , pro and con ,Gene IJD made a motion ,2nd by
Tom TSA that the ~~repeater be moved to another site. No actual site
was selected or time frame was included in the motion.~~
The motion was defeated by a count of 7 against, 2 for.
Post discussion was that the repeater cost to the club was minimal,
and has been very reliable over the years. Rick HIO and Carl PCK will
individually work on setting up links to OSR , and feeling of most
members present this is the way to go , with the club owning and
purchasing some of the hub equipment when all is in place.

Meeting adjourned by Tom TSA.

*GBARC Replace 34/94 repeater with their
own equipment.*

file:execmeet1

Ian HIP