

NOV 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 Tuesday of each month, except July and August, at the Billy Bishop Airport. 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 _____ VE3JJD 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	VE3NEM TOM
VE3AUB JACK	VE3PCK CARL
VE3BFV JIM	VE3RHJ BRAD
VE3BZC ROSS	VE3RLW ROB
VE3CC CY	VE3RSV RALPH
VE3CRV JIM	VE3TDF PAT
VE3CUV ROSS	VE3TFQ JIM
VE3DIQ BILL	VE3TFV KEN
VE3DKF JIM	VE3TSA TOM
VE3DTS JACK	VE3TTV HENRY
VE3DXO DAVE	VE3TUM RICK
VE3EBM ROY	VE3TUP KLASS
VE3FFN WALTER	VE3TUQ AUBREY
VE3GDH DEREK	VE3TUS BARRIE
VE3HIO RICK	VE3TWI OKKE
VE3HIP IAN	VE3TWJ DAVE
VE3HMZ BILL	VE3TWK JACK
VE3HXX IAN	VE3TWL CATHY
VE3IEV JOHN	VE3TXB JOHN
VE3JJD GENE	VE3TYL JIM
VE3IOD GARY	VE3UIC JASON
VE3IXR MURRAY	VE3VTO DON
VE3JUO DON	VE3WNV BILL
VE3LKD BOB	VE3WWS VIHLO
VE3LPD LAVERNE	VE3XOX BOB
VE3LPT MOE	SWL STAN
VE3MTG LARRY	SWL DAN
VE3MTV NORM	
VE3MWU NICK	

This Issue:

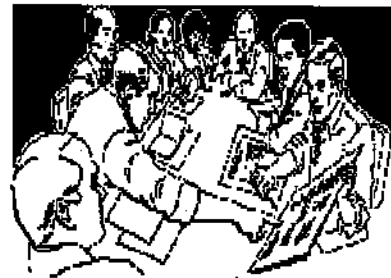
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8 DECEMBER 92
BREAKFAST MEETINGS:
14 NOVEMBER 1992
28 NOVEMBER 1992
SANTA CLAUS PARADE
21 NOVEMBER 1992
GEORGIAN BAY HAMFEST
28 NOVEMBER 1992

MINUTES OF MEETING - GEORGIAN BAY AMATEUR RADIO CLUB - 13th OCTOBER 1992

TOTAL OF 24 MEMBERS PRESENT. Minutes of September 8th 1992 meeting approved..moved by Bill HMZ, seconded by Don VTO. Carried as recorded with no changes. Meeting opened at 7:45 p.m. by Pres Bob XOX. Sect'y/Treas gave a report of club bank account balance of \$748.36. The student bank account for training new amateurs stands at \$956.79. All outstanding bills have been paid. Treas. report moved by Tom TSA, seconded by Gene IJD, carried. Under old business, power supplies have been supplied by Ian HXX. These will be used on the UHF link. Gene IJD gave a report on the installation of these. Ian HXX refused any reimbursement for these supplies, and the club expressed their appreciation. Bob XOX, gave a report about insurance coverage investigation for our club equipment and liability for members when putting up displays etc. The annual fee on equipment would be around \$100.00. Liability would be about \$350.00 a year as we are not an incorporated club (\$250.00 deductible). To incorporate the club, government fees would be in the neighbourhood of \$500.00 to \$600.00, with lawyers fees an additional \$300.00 to \$400.00. For a fee of \$20.00 per member we could incorporate our club. Bob asked for discussion from members. The maximum reimbursement for the \$100.00 premium is \$4500.00. If we go for insurance without being incorporated, individual members could still be sued by another party, for additional damages. Bob agreed to talk to Doug TDS, the lawyer in meaford about drawing up the legal papers for just the cost alone. Moved by Roy EBM, seconded by Don VTO that the club become incorporated. A quorum of 10 members, excluding the executive, is sufficient to pass the motion. A quorum is present at this meeting. Bob will find out the total cost, and the amount will be assessed equally between our membership. Tom TSA agreed to make a special mailing with a flyer about incorporation, so that all our members are informed. The information to our members is that a motion to incorporate has been tabled, and if they have any input, be present at the next meeting, or write their views to the secretary. Cost could also be covered by a partial assessment, and part payment from our club account. Roy agreed to the amendment to the motion that next meeting we will vote on how to pay the bill, depending on facts Bob finds out from doug TDS. It was agreed to postpone getting insurance untill the club is officially incorporated. Bob gave a report on the repeater in Paisley, 146.730mhz. As the repeater was on the air without an identifier, this may cause problems with the D.O.C. As VE3GBT is a club call planned for O.S. area, the call put on the Paisley machine is VE3XTX, registered under Bob's own name. The cans owned by Carl PCK and Doug TDS. Linking is planned with other repeaters. As Carl is now back in the area, he plans to put the 146.290 machine back on the air soon. Club members are welcome to use this repeater, however Carl intends to retain ownership. Not sure of the site as yet. The club may purchase this machine in the future. Tom TSA has donated two repeaters to the club, and discussion took place about what site to use as a hub. As packet station at the Maclean Hunter site is coming down, this is a possible site. Tom TSA has already discussed this with Norm MTV. After much discussion, moved by Tom TSA, 2nd by Jack DTS that the club put up its own repeater at the Maclean Hunter site. Call and frequency to be named later. Carried. Report on the Fall fair by president Bob. Lots of help turned up for setup, talking to people and manning the station. We did however clash with one of the DJ systems. They did agree to shut down when we wanted to go on the air. Wait FFN, gave a report on The Split Rail festival. Several operators did show up. Packet, RTTY, 2M and satellite tv were all operating. Information about the classes in Owen Sound was distributed. Wait now known as "Mr. Split Rail" thanks to all those who participated. Gene IJD, gave a talk and showed a list of users on his packet bbs. Approximately 47 users locally on the system. A group from the club indicated getting together and buying some TNC's at a group price. A saving of \$30.00 to \$40.00 per unit if 6 or more purchased at one time. Wait FFN agreed to see what price he could obtain for 6 or more. Price depends on the facilities of the TNC. Baycom kits are another route, however very limited in their options. Those members interested got together after the general meeting and discussed which way they should go to get started on packet. Information on the Boy Scout Jamboree on the air was given by Gene IJD. This is being held this week at Harrison Park. Tom and Gene plan to bring in their tri-banders so that seven bands can be worked at the same time. It is an international Scout weekend and contacts will be made on



**MINUTES OF THE
LAST GBARC MEETING**

MINUTES (CONTINUED)

many DX stations world wide. Sharing interests on the air is a great experience for these young people. Any help from club members would be appreciated at Harrison Park this weekend. Club by-laws have already been agreed by the club, so the official club document was signed and added to the club archives. Appreciation to Tom TSA for all the work he has put into this on behalf of the membership. A list of all amateurs in the area, something like 110 was shown by Tom TSA. It was suggested we contact some of these and let them know about the club. Executive decision that information on the club will be sent. Tom TSA has mailing stickers ready to go.

NEW BUSINESS A letter was received from Linda Droin, Bob LKD's xyl, for assistance with communications on the Santa Claus parade this year. Six people are required. Volunteers are XOX, IJD, TXB, LKD, HMZ, TSA. Any loaner handhelds would be appreciated. Roy EBM, gave a talk on the log periodic antenna he constructed for 2 metres. A lot of interest was shown and he passed out instructions on the construction. It has a 9db gain and he has had a lot of success on 144-148 mhz. A precision antenna for sure and dimensions must be accurate. Jim BFV, tried a log periodic commercial antenna 2 years ago, but didn't have any luck. 50/50 draw winner was Roy EBM. Meeting adjourned by Gene IJD.

FROM THE EDITOR

Minutes of meeting October 20th, 1992 at the QTH of VE3TSA. The Executive meeting was held to discuss the new repeater which was approved at the last GBARC meeting on the 13th of October 1992. In attendance from the executive were Bob XOX, Gene IJD, Tom TSA. Others in attendance were Rick HIO and Henry TTV. The meeting got underway at 8:30 P.M. with Bob XOX presiding. A discussion took place as to the feasibility of the repeater and site. It was decided to put a repeater at the Maclean Hunter site for downtown coverage, using the existing RG8 feedline which is there and being used currently by VE3OST digipeater. This feedline is far from ideal but it should provide coverage in the downtown area anyway. Rick HIO donated an GE Executive repeater for the clubs use. This is a 50 watt repeater with a single tube final. The duplexers which are currently in

use with the packet digi's VE3OST will be used for this fm repeater, as will the call sign VE3OST and the frequency pair 145.290 -. Carl PCK previously communicated to Bob XOX that we could use this frequency, since if the club has a repeater serving the downtown area then he will not put up his repeater (VE3RBT). Rick HIO will order the crystals and Bob, Carl and Gene will remove the cans from the Maclean Hunter site so that they can be retuned for 145.290-. Meeting adjourned at 9:45 P.M.

J.O.T.A. The Jamboree on the air weekend was a bit wet and snowy but both beams were erected with the help of a lot of eager scouts. We operated packet on one beam and ssb phone on the other, the 40 or so scouts that were there were very interested in both operations. During a QSO with a JOTA station in PEI, one of the local scouts mentioned that his grandfather lived in PEI, and sure enough, the operator in PEI knew him and passed on best wishes from the grandson in Owen Sound. How about that! Club members in attendance were IJD, LKD, XOX and TSA. You guys missed a very enjoyable time with the scouts, they were keen as mustard to talk on the air and had plenty of good questions about radio. Well perhaps next year.

SANTA CLAUS PARADE Bob LKD says that a couple more operators could be used on Nov 21st. Please contact Bob directly if you are able to help or could loan a handheld. Thanks in advance.

Breakfast Club The breakfast get togethers on the second and last Saturdays of the month continue to be very popular with excellent attendance. For those who haven't been there yet, we just chin wag, eye ball and generally shoot the breeze. So come on out so we can see how much hair you're losing..ya can't tell that on the air you know.

The York Amateur Radio Club presents The 16th Annual **NEWMARKET HAMFEST** Saturday, November 14th, 1992 at Huron Heights Secondary School, Newmarket, Ontario.
Admission: \$5.00 per person. Doors open to the general public at 9:00 a.m. Talk-in on VE3YRC 147.225+. Plenty of parking. Door prizes, Grand Prizes. Refreshments available. Extra space for socializing. Please note: The entrance to the Hamfest for the public is at the main entrance to the school right on Huron Heights Drive.

DX NEWS

THANKS TO TEDD, KB8NW, WAYNE, KH6WZ, DICK, AA5NT, AND THE OHIO/PENN DX PACKETCLUSTER NETWORK FOR THE FOLLOWING DX INFORMATION.

ETHIOPIA. ET3BC AND ET3YL HAVE BEEN HEARD ON 21295, 14200, 14245 AND 7011 KHZ. QSL ET3BC VIA K4PHE, AND ET3YL VIA N4NX.

MINAMI TORISHIMA. JA9IPX/JD1 AND JK1ABP/JD1 WILL BE ACTIVE UNTIL JANUARY 14, 1993, ON ALL BANDS WITH SSB, CW AND PACKET.

FAROE ISLANDS. OY2VO HAS BEEN ACTIVE ON 28420 KHZ AROUND 1354 AND ON 21349 KHZ AROUND 1700Z. QSL VIA OZ9DP OR THE BUREAU. OY1HJ HAS BEEN ACTIVE ON 14226 KHZ AROUND 2155Z.

BURKINA FASO. XT2BW IS NOW UP AND RUNNING ON RTTY. HE CAN BE FOUND ON 28073 KHZ AROUND 2156Z. QSL VIA WB2YQH.

SAN FELIX. JOHN, XQ0X IS QRV AGAIN FROM SAN AMBROSIO ISLAND FOR A FOUR MONTH STAY. QSL VIA CE3ESS.

EASTERN MALAYSIA TRIP CANCELED. YUTAKA, JA9AG, WAS ON HIS WAY TO THE AIRPORT FOR HIS 9M6 DXPEDITION WHEN HE WAS INVOLVED IN A TRAFFIC ACCIDENT. HIS INJURIES WERE NOT SEVERE.

GUADELOUPE. JIM, W6JKV, EXPECTS TO SIGN FG/W6JKV FROM ABOUT OCTOBER 23 TO NOVEMBER 9. ACTIVITY WILL BE ON 6 METER SSB AND CW, AND ON 2 METER EME WITH A MONSTER 54 FOOT LONG YAGI. FOR THE LATEST INFORMATION ON THIS OPERATION AND OTHER 6 METER ACTIVITY, LISTEN IN ON 28885 KHZ.

CROATIA. ERIK, ON5AI, WILL BE QRV AS 9A/ON5AI BEGINING ON OCTOBER 24 AND STAYING UNTIL MAY 1993. ERIK BELONGS TO THE BELGIAN UN "BLUE HELMET" FORCES CONTROLLING THE PEACE IN 9A LAND. HE WILL BE ACTIVE ON ALL BANDS WITH CW AND SSB. A SPECIAL QSL WILL BE AVAILABLE VIA BOX 45, KASTERLEE 2460 BELGIUM.

COCOS ISLAND. JOSE, T2JJP, SAYS EVERYTHING IS ON SCHEDULE FOR T19JJP TO START ON NOVEMBER 1 AND END ON 11TH. THIS DXPEDITION WILL OPERATE SSB AND RTTY ONLY. CHECK 10, 15

AND 20 METERS. SOME ACTIVITY IS POSSIBLE ON 75 METERS. QSL VIA T2AOC.

BELIZE. GLENN, AE0Q WILL ACTIVATE V31RY FROM NOVEMBER 22 THROUGH 31. QSL VIA WN0B.

RTTY SPOTS. 3C1EA 14088/0645 9M6HF 14079/1719 9Y4VU 28092/1653 CN8NP 14078/0636 WITH ARQ FR5FI 14088/1718 GM0ILB 21090/1803 JX9EAH 14088/1726, QSL VIA LA2T OH1AF/OJ0 14085/1940 GJ3YHU 14089/1025

THE ARRL DX ADVISORY COMMITTEE (DXAC) HAS VOTED TO RECOMMEND THE FOLLOWING ADDITIONS TO THE DXCC COUNTRIES LIST:

CROATIA 9A (WAS YU2) 15 TO 1 SLOVENIA S5 (WAS YU3) 15 TO 1 BOSNIA-HERCEGOVINA YU4 13 TO 3 MACEDONIA YU5 12 TO 4

THE DXAC INTENDS FOR THE ENTITY OF YUGOSLAVIA TO CONTINUE ON THE LIST. THIS ENTITY IS COMPOSED OF SERBIA (YU1), MONTENEGRO (YU6), VOJVODINA (YU7) AND KOSOVO (YU8).

THESE RECOMMENDATIONS NOW GO TO THE ARRL AWARDS COMMITTEE FOR CONSIDERATION. START DATES WILL BE ANNOUNCED AFTER AWARDS COMMITTEE ACTION. PLEASE, DO NOT SEND QSL CARDS TO THE DXCC DESK FOR THESE COUNTRIES UNTIL THEY HAVE BEEN OFFICALLY ADDED TO THE LIST AND A DATE FOR ACCEPTANCE HAS BEEN ANNOUNCED.

THE ARRL DX ADVISORY COMMITTEE (DXAC) HAS VOTED NOT TO PURSUE THE FOLLOWING ITEMS:

1. CHANGING THE DXCC COUNTRY STATUS OF FORMER USSR REPUBLICS. (2 YES 14 NO)
2. CONSIDERATION OF A DXCC RULES REVISION TO PERMIT PARTICIPATION BY STATIONS LOCATED ON BOARD DOCKED SHIPS IN ARRL AWARDS PROGRAMS. (3 YES 13 NO)
3. A STUDY OF AN ADVANCED DXCC AWARD. (3 YES 12 NO)
4. CHANGING THE DXCC COUNTRY STATUS OF 4U1VIC. (3 YES 13 NO)

THESE ITEMS HAVE BEEN REMOVED FROM THE DXAC AGENDA. NO FURTHER ACTION WILL BE TAKEN AT THIS TIME.

An Introduction to packet by Larry Kenney WB9LOZ

Over the next 4 issues of feedback will be a set of articles which do a very good job of explaining packet radio. This is good reading for the packeteer as well as the new comer. Even if you don't have a TNC or do and don't seem to get the most of it, read on and take the mystery out of all those wierd commands.....*editor*

INTRODUCTION TO PACKET RADIO - PART 4 by Larry Kenney, WB9LOZ

The TNC commands that affect the monitoring mode and what you see on the screen while monitoring will be discussed in this part, then we'll take a look at the basics of packet bulletin board operation.

TNC COMMANDS: MONITOR - This must be ON for you to monitor anything. When ON, you see packets from other stations on the frequency you're tuned to. What packets you see is determined by other commands from the list below. If MONITOR is OFF, you see only packets sent to you while you're connected to another station. **MALL** - If MALL is ON, you receive packets from stations that are connected to other stations, as well as packets sent in unproto (unconnected) mode. This should be ON for "reading the mail". If MALL is OFF, you receive only packets sent in unproto mode by other stations. **MCOM** - If ON, you see connect <C>, disconnect <D>, acknowledge <UA> and busy <DM> frames in addition to information packets. If OFF, only information packets are seen. **MCON** - If ON, you see packets from other stations while you're connected to someone else. This can get very confusing, but is useful when your path is bad and you want to see if your packets are being digipeated okay. If OFF, the monitoring of other stations is stopped when you're connected to another station. **MRPT** - If ON, you see a display of all the stations used as digipeaters along with the station originating the packet and the destination station. If OFF, you see only the originating and destination stations. For example, if you have MRPT ON, you might see a transmission such as this: VE3IJD>VE3XOX,VE3OST*: I'll be leaving for the meeting at about 7:30. If MRPT was

OFF, the same transmission would look like this: VE3IJD>VE3XOX: I'll be leaving for the meeting at about 7:30. In the first case, you can see that the W6PW-5 digipeater was being used. The asterick indicates which station you were hearing the packet from. In the second case you have no idea if digipeaters are being used or what station you were receiving. **HEADERLN** - If you have this turned ON, the header of each packet is printed on a separate line from the text. If OFF, both the header and packet text are printed on the same line. **MSTAMP** - Monitored packets have the date and the time the packet was received if MSTAMP is ON. If it's OFF, the date/time stamp is not shown.

I run my station with all of these commands, except MCON, turned ON so that I can really see what's happening on the frequency I'm monitoring. Try various combinations of these commands and then decide on the combination you like best for your station.

USING A PACKET BULLETIN BOARD SYSTEM: You connect to a bulletin board system (BBS) exactly the same way as you connect any other station. Once connected, you'll see a welcoming message, some basic instructions and other information. This information will vary from system to system. The first time you connect you'll receive a request to enter your name, home BBS, QTH and zip code for the system user file. You enter your name using the letter N followed by a space and then your first name, such as: N Larry. Your "home BBS" is the system you plan to use regularly and want all of your personal messages delivered to. You enter that by typing NH followed by a space and then the call of the BBS, such as NH VE3IJD. (Note: SSIDs are not used with BBS operation except for when making the connection. The BBS software ignores all SSIDs.) Your QTH is entered with the NQ command, such as NQ OWENSOUND,ON Enter the full city name and the two letter province abbreviation. You enter your postal code with NZ followed by a space and your six-digit code. The home BBS, QTH and zip code information is sent to a central data bank at the WD6CMU BBS known as the "White Pages", and can be used by anyone. System operators (sysops) use it for determining the correct system when forward messages, and you can use it to find out the "home BBS" of your friends. How to use the "White Pages" will be discussed later on in this series.

When checking in to a BBS for the first time, you

should become familiar with the commands available to you. Each BBS or mailbox is a little different from the next, so read the introduction carefully and follow the directions. If you don't know what to do next, enter H for the HELP instructions. Make note of the command letters, enter only one command at a time, and make sure you enter them correctly. Computers are not very forgiving and expect things to be entered in proper form. Take your time, check out the features that the particular BBS or mailbox offers and enjoy yourself. There's no need to feel rushed or intimidated. If you get to a point where you don't know what to do next, don't give up and disconnect, enter H again for HELP. That's what it's there for! I suggest making a printer copy of the complete help file so that you have it available as a reference when using a BBS.

Now let's go through the basic procedures you should follow when checking into a BBS. When you receive the welcoming message, you'll note that the last line ends with a >. This is known as the prompt, and is where you enter the command you want performed next. If there are personal messages addressed to your call, the BBS will list them for you following the welcome message. Note the message numbers.

At the prompt, the first thing you should always do is list the new messages, by entering L. The BBS program updates the user file each time you check in, logging the latest message number. The next time you check in, only new messages that have been received by the system will be included in your list. The first time you'll receive all of them, since they're all new to you. This list can be very long, as many systems have more than 200 active messages on line. When you receive the list, note the numbers of the messages you're interested in reading.

Next, read the messages you're interested in. You do this by entering R XXXX, where the Xs represent the message number, such as R 4521. Note that there is a space between the command and the number. It's best to have your buffer or printer turned on when reading messages, because they're apt to come in faster than you're able to read them. You should have a means of saving them for reading later after you've disconnected. If there were messages addressed to you, you should erase or "kill" them once you've read them. You can do this with the "KM" command, which means "Kill Mine". This command will erase all messages that are addressed to you that have been marked as having been read. You can also kill each

message individually by entering K XXXX, where the X's are the message number.

Once you've read all the messages you're interested in, you have several options. You can look back at old messages, send messages to other stations, see what's available in the files section, download a file, upload a file, check the list of stations that have recently checked in to the BBS or stations that have been heard on frequency, monitor other frequencies used by the BBS, use the gateway feature (if available), check the status of the BBS tasks, or a variety of other things. In part 5 we'll cover some of the other BBS commands. In the mean time, the help file of the BBS should give you all the information you need to try any of the functions mentioned above. Enjoy!

INTRODUCTION TO PACKET RADIO - PART 5 By Larry Kenney, WB9LOZ

In this part of the series, I'll explain how to use the various BBS commands that you have available to you. This information is based on WORLI software, so it might vary slightly for users of AA4RE, WA7MBL, or other type systems. Use the H - HELP command on your BBS if some of these commands do not work as described.

LIST COMMAND: The first thing you should do when logging on to a BBS is to use the LIST command. There are many variations available, but L, by itself, is the one used most often. L (List) - Lists all new messages, except other user's personal messages, that have been entered since you last logged in. If you want to list specific messages, you can use one of the following variations of the L command: Lx - Lists all messages of the type designated by 'x'. Example: LB will list all bulletins. L # - Lists messages back to and including number #. Example: L 4050 will list all messages, except personal messages to others, from the latest one back to #4050. LL #- Lists the last # messages. Example: LL 15 lists the last 15 messages received at the BBS, excluding other's personal messages. L 1 - Lists ALL non-personal messages. L> callsign - Lists all messages TO callsign indicated. Example: L> N6XYZ L< callsign - Lists all messages FROM callsign indicated. Example: L< N6XYZ L@ designator - Lists all messages that have that "designator" in the @ BBS column of the message

header. Example: L@ ALLCAN will list all messages with ALLCAN in the @ BBS column.

READ COMMAND: To read a message, you enter R followed by a space then the message number. Example: To read message 5723, you'd enter: R 5723. You also have the option of using the RH command, which will give you all of the forwarding headers in detail, rather than just giving you the path. Example: To read message 5723 with the full headers, you'd enter RH 5723. There is one other version of the READ command, and that's RM. Entering RM by itself will give you all of the messages addressed to you that have not yet been read.

ERASING MESSAGES: Once you have read a personal message, please erase it. The sysop will appreciate your help in clearing up "dead" messages. You use the K - KILL command to do this. You can enter K #, such as K 5723, which will erase that particular message, or you can enter KM, which will erase all of the personal messages you have read. If you use the KM command, the BBS will list the message numbers for you as they're killed.

THE "S" COMMAND: S (Send) - The "S" command is also used for sending a message, but it must be further defined. There are three types of messages found on a packet bulletin board system: Personal, Bulletin, and Traffic. "SP" is used for sending a personal message to one other station, "SB" for sending a bulletin, and "ST" for sending a message that's going to be handled by the National Traffic System.

You're able to send a message to one particular person, to everyone on the local BBS, to everyone at every BBS and mailbox in Ontario or all across the entire country. It all depends on your addressing.

At the BBS prompt you enter the appropriate command (SP, SB, or ST) followed by a space and then the addressee. The addressee can be a callsign or it can be something of a general nature, such as ALL, QST, ARES. Examples: SP VE3VTO or SB ALL. All commands, of course, must be followed by a <CR>.

If you wish to send the message to someone at another BBS, you have to indicate the call of the other BBS following the call of the addressee. For example, to send a message to VE3EFX, who uses the VE3OVV BBS, you would enter: SP VE3EFX @ VE3OVV.

To send a general message to more than just the

local BBS, you need to use a designator in place of the BBS call. The designator indicates the area where you want the message distributed. ALLCAN indicates that you want the message sent to all CANADIAN BBSs. A message that's sent @ ALLONT will go to EVERY BBS in the province, and a message sent @ ALLUS will be sent to EVERY BBS IN THE USA. Extreme care should be used when using the ALLUS designator. Please make sure that the subject matter is of interest to EVERY packet user and please keep the message SHORT. The National HF Packet Network is somewhat fragile, due to band conditions, so unnecessary traffic can keep more important traffic from getting through. Here are a few examples of addressing bulletin-type messages for general distribution: SB ALL @ ALLCAN SB QST @ ALLONT SB ALL @ ALLUS

If you have traffic for the National Traffic System, you must use a special format. NTS messages are entered as ST ZIPCODE @ NTSXX, where XX is the two-letter state abbreviation. Examples: ST N4K2L5 @ NTSN ST 60626 @ NTSIL

When you have the address line complete, you enter a carriage return. You'll then receive a prompt asking for the SUBJECT or TITLE of the message. Enter a brief description of what the message will be about, followed by a carriage return. Next, you'll be prompted to enter the TEXT of the message. When entering the text, you should insert carriage returns at the end of each line, as if you were typing a letter. A normal line has a maximum of 80 characters, so when you have 70 to 75 characters typed, enter a carriage return and continue on the next line. This will prevent words from wrapping around to the next line and the program inserting an unnecessary blank line in the text.

When you have your message complete, you end it with a CONTROL Z. (You send a CONTROL Z by holding down both the CONTROL key and the Z key simultaneously.) You should follow the CONTROL Z with a carriage return. When you receive the BBS prompt back, you'll know that the message has been accepted by the system.

FILE DIRECTORY COMMANDS:

W (What) - Entering W, by itself, gives you a list of the directories available on the BBS. Wd - Gives a list of the files in the directory indicated by d. The list you obtain with the W command will indicate what letter to use for "d" to list the files of specific topics.

D (Download) - Used for reading files from a directory. Must be used with a directory ID and filename using the following form: Dx filename. x is the directory ID and the filename must be entered exactly as listed in the directory. Again, the directory ID is obtained from the list you receive with the W command. Example: DG FCCEXAMS.88

U (Upload) - Used for uploading (sending) a file to the BBS. The command must be used with a directory ID, followed by the filename you're assigning to the file, using the form: Ud filename. The d indicates the ID of the directory where you want to enter the file. Filenames can have up to 8 characters preceding the dot and 3 characters following the dot. Example: UM FLEAMKT.INF would upload a file named FLEAMKT.INF into the directory with the M ID. The BBS program will not allow you to upload a file with a filename that already exists, and some directories are set by your local sysop for downloading only.

GENERAL MISCELLANEOUS COMMANDS:

I (Info) - Gives you details on the hardware, software and RF facilities of the BBS you're using.

J - Displays a listing of stations that were heard by the BBS or that connected to the BBS. Must be used with a port identifier, such as JA, JB, etc. J by itself will list the port IDs for you.

M (Monitor) - Used for monitoring the activity on another port of the BBS. Must be used with a port identifier, such as MA, MB, etc. M by itself will list the port IDs.

B (Bye) - When you're finished using the BBS, you enter a B to disconnect.

--- In part 6 of this series, the topic of discussion will be NET/ROM.

73, Larry, WB9LOZ

INTRODUCTION TO PACKET RADIO - PART 6 - By Larry Kenney, WB9LOZ In this part of the series we're going to take a look at how to use NET/ROM and THENET for making contacts. It's a way of making your operating time on packet more enjoyable due to the increased reliability of the network and the greatly expanded area that you can reach.

When a digipeater adds NET/ROM or THENET it becomes a digipeater/node. This means that you can

still use it as a regular digipeater, but you can also use it to access a far reaching network of nodes. When using a string of digipeaters, your packets have to reach their destination parity correct, and the receiving TNC has to return an acknowledgement (ack) to your TNC for each packet cycle to be completed. As you add more digipeaters to the string, the chances of this happening become less and less. Other stations on the frequency and noise can be the cause of many retries. When using a node, your packets no longer have to reach their destination before acknowledgements are returned to your TNC. Now, each node acknowledges your packet as its sent along the way toward its destination.

Here's how you use the nodes network: No matter what station you want to work, you connect to the closest node. When you connect, your TNC automatically switches to converse mode, so anything you now type is sent to the node as a packet, and the node acknowledges each packet back to your TNC. For the remainder of your connection your TNC works only with this node.

Once you're connected to the node, enter "NODES" <return> and you'll receive a list of the other nodes available to you. It's sometimes difficult to determine the location of the nodes from this list, since the IDs and call signs you receive aren't always very descriptive. You might find the node maps and listings that are available on most packet bulletin boards to be useful tools. With these maps and listings, you can easily determine where the nodes are located. Make sure you have a recent copy, as new nodes are being added quite frequently.

Let's say you want to have a QSO with VE3SLQ. You first must determine what node is closest to that station. Let's say it's VE3WWD. Once you know the call of that node, you connect to it WHILE STILL CONNECTED TO YOUR LOCAL NODE VE3OST. You use standard protocol, C VE3WWD. Your TNC will send this as a packet to your local node, and your local node will ack it. Your TNC is happy because the cycle is completed as far as it's concerned. The network will then go to work for you and find the best path between your local node and the one you're trying to reach. You'll then see one of two responses: "Connected to VE3WWD" OR "Failure with VE3WWD". If it can't connect for some reason, try again later. It could be that VE3WWD is temporarily off the air or the path has decayed and is no longer available. We're going to be positive here and say we

received the first option.

Now that you're connected to VE3WWD, enter "C VE3SLQ". Again, your TNC will send this as a packet to your local node and the node will acknowledge it and send it down the path to VE3WWD. VE3WWD will then attempt to connect to VE3SLQ. Here again you'll get one of the two responses: "Connected to VE3SLQ" OR "Failure with VE3SLQ". If you get connected, you hold your QSO just as you normally would, but there's one BIG difference -- your TNC is receiving acknowledgements from your local node, and VE3SLQ is receiving acknowledgements from VE3WWD. That long path is eliminated for both TNCs, retries are greatly reduced, and your packets get through much faster. When you're finished with the QSO, you disconnect in the normal manner -- go to Command Mode using Control C and enter "D" <CR>. The entire path will then disconnect automatically for you.

If you've been monitoring lately, you might have seen the nodes in action and wondered why they were sending all of those weird symbols like @fx/< ~ |. What you're seeing is the nodes communicating with each other, updating their node lists. You also might have noted callsigns with high numbered SSIDs, such as VE3OBC-15, VE3WWD-14, VE3RUN-12, etc. The nodes change the SSID of all stations so that the packets sent via the network are not the same as those sent directly. If you were to use a node to connect to another station in the local area, there's the possibility of your packets being received at this station both from you directly and from the node. If the call through the node wasn't changed, the TNCs involved would be totally confused as it would appear that two stations were connecting using the same callsign. The node automatically changes the SSID using the formula 15-N, where N is your usual SSID. A call with -0 becomes -15, a -1 becomes -14, -2 becomes -13, etc.

In part 7 of this series, I'll discuss some of the other commands available to you on the nodes, including how to call CQ.

CRRRL BULLETIN

COMMUNICATIONS CANADA STUDY Communications Canada is planning a national survey regarding spectrum management services. The survey will be conducted by Crop Inc. in partnership with Environics and Stratix Inc. Interviews will take place during October 1992 by telephone with a representative sample of licensed spectrum management clients across Canada in five categories: radio amateurs, maritime, aeronautical, public commercial and private commercial. The information gained from these interviews will assist the Department in setting policy and operational objectives in the future and in developing standards of service.

NEW RADIO TECHNOLOGY -

The JARL (Japan Amateur Radio League) reports that Tohoku Electric Power Corp. has developed new radio technology that permits single frequency, two-way simultaneous radio communications. The end result is telephone-like audio because **BOTH SIDES OF A VOICE CONVERSATION CAN BE HEARD AT THE SAME TIME ON A SINGLE FREQUENCY.**

Most business radio stations use only one frequency; therefore a dispatcher and the receiver cannot talk simultaneously. Each party must press the "push-to-talk" button whenever he or she wishes to speak and release the button to hear the other party.

The newly-developed radio system divides the operator's voice signals into 0.2-second sound segments and compresses them into half the time before transmission. The other half of the time is allocated to receiving similar messages from the other party. This allows both voices to be effectively transmitted at the same time on a single frequency. JARL says the new technology can be utilized in other radio services - including amateur radio. W5YI Report (reprinted from TelePARK)

short bits

MORSE CODE TEST FORMAT CHANGED IN UNITED KINGDOM - Britain's radio licensing authority, The Radiocommunications Agency, has announced changes to the format of the 12 wpm Amateur Morse test. It has been decided that 12 wpm test should also be in a QSO format. This is considered to be better at preparing candidates for the sort of operating conditions they can expect to encounter 'on-the-air.' (Their 5 wpm code test is already in a QSO format.) The Agency believes the existing English text and numerals code test falls far short of preparing anyone to actually understand a live message on the air. The new style test will be available effective January 1, 1993. A new procedure for the identification of candidates will also be introduced. Instead of written proof of identity, applicants will be required to bring to the test centre two recent passport-size photographs of themselves.

MEXICAN HAM MICROSAT TO BE LAUNCHED BY RUSSIA IN DECEMBER 1992 - A new Microsat-class OSCAR satellite is planned for launch before the end of 1992. UNAMSAT-1 the first Mexican Amateur satellite is being constructed at UNAM, the Autonomous University of Mexico. As with the earlier Microsats it will have five modules, each about 20 cm on a side.

SPECIAL PREFIXES FOR CARF's 25th ANNIVERSARY DOC has authorized all Canadian Amateurs to use special prefixes to mark the 25th Anniversary of CARF. The following prefixes are authorized for two 48 hour periods: VO1 (Newfoundland) may use VO9 VO2 (Labrador) may use VO0 VE1 (New Brunswick and Nova Scotia) may use VD1 VE2 (Quebec) may use VD2 VE3 (Ontario) may use VD3 VE4 (Manitoba) may use VD4 VE5 (Saskatchewan) may use VD5 VE6 (Alberta) may use VD6 VE7 (British Columbia) may use VD7 VE8 (Northwest Territories) may use VD8 VY1 (Yukon) may use VY3 VY2 (Prince Edward Island) may use VY4 The two 48 hour periods authorized are: 0000 UTC 24 October to 2359 UTC 25 October 0000 UTC 28 November to 2359 UTC 29 November

These periods coincide with the CQ WW DX SSB and CQ WW DX CW contests. from Dave Goodwin VE2ZP

NEW ISSUE COMMUNICATIONS CANADA RIC 24, Issue 5, September 1st, 1992. Information on the amateur operator's certificate examination is now available free from any DOC office.

JAPAN NOW HAS AN AMATEUR RADIO RECIPROCAL OPERATING AGREEMENT WITH KOREA. There are now 1,203,226 amateur radio stations in Japan and 2,280,705 licensed ham operators.

HAM BAND CHAOS IN GERMANY? We understand that the Deutsche Bundespost (German telecommunications regulating body) has proposed new regulations for radio amateurs in Germany. The new regulations totally deregulate amateur radio.

The new proposed rules will apparently abolish all specific mode subbands and licenses for special operations. The only guidelines there appear to be, is that amateurs may not interfere with other services.

The DARC (German Amateur Radio Society member of IARU) is suggesting some amendments to the Bundespost in order to prevent what they believe could be complete chaos. If DARC fails, the new regulations go into effect on Jan. 1, 1993.

Jet Propulsion Laboratory, Pasadena, Calif.

One of the largest near-Earth objects, an asteroid named "Toutatis," will make a close Earth approach on Dec. 8, 1992, passing by at about 2.2 million miles (3.6 million kilometers) distance.

Dr. Donald Yeomans, Head of the Near Earth Object Center at NASA's Jet Propulsion Laboratory, Pasadena, Calif., said the object, formally known as Asteroid 4179 Toutatis, passes Earth less than one degree above Earth's orbital plane every 4 years, making it an excellent object for study. The asteroid, at 2 miles (3.5 kilometers) diameter, is one of the largest to cross the Earth's orbit on a regular basis.

Yeomans said the ground-based viewing conditions will be excellent for infrared optical and radar observations just before, during and well after the close Earth passage, and he notes that astronomers in many areas of the world simultaneously will study the body using several different techniques.

Toutatis again will make close Earth approaches in 1996 and 2000. In 2004, it will come as close as about four Earth-Moon distances or about a million miles (about 1.6 million kilometers). Its orbit takes it almost

short bits (con't)

to the distance of Jupiter's orbit before the sun's gravitational attraction pulls it back.

The approach of Toutatis this year and the one in 2004 represent the two closest Earth passages of any

10/02/92: NASA'S HUBBLE TELESCOPE EXPLORES JUPITER'S VOLCANIC MOON IO

Extended observations by the Hubble Space Telescope indicate that Jupiter's moon Io has a smaller atmosphere than previously thought with very dense regions possibly over volcanoes and surface frost, NASA announced today.

The observations also show that despite continual volcanic activity, Io's surface has remained largely unchanged since first photographed by the Voyager spacecraft when it flew past the moon in 1979.

The Hubble observations mark the first time astronomers have been able to directly gauge the size of Io's tenuous atmosphere. Sulfur and oxygen emissions from the atmosphere indicate that it is at least three times smaller than previously thought -- 1.5 Io diameters across instead of the previous upper limit value of 5 Io diameters.

These observations show that the atmosphere may be patchy, with very dense regions having 1000 times higher pressure than adjoining, low-density regions. Likely sources for the atmospheric gas are sulfur dioxide from the volcanoes, evaporation of surface frost in sunlit areas or material knocked out of the surface ("sputtered") into the atmosphere. The observations also confirm that the surface contains sulfur dioxide frost.

Hubble's observations reveal a new oxygen emission never before detected from the torus, a giant ring of high-temperature gas encircling Jupiter. From these measurements, the density and the amount of oxygen relative to sulfur in the torus have been determined. Oxygen is the most abundant component of the torus with about twice as much concentration as sulfur.

[EDITED]

Io's Surface Unchanged Despite Volcanism

To look for possible surface changes, researchers compared FOC visible-light images to a "synthetic" Voyager image modified to match Hubble's resolution. The astronomers concluded that Io's trailing hemisphere, known to be more geologically active,

has not changed noticeably in the 13 years between Voyager and Hubble observations.

Detailed analysis of the images is still being carried out to search for less obvious changes. Two small areas roughly 200 miles across seem to have undergone slight change.

This lack of large-scale change is mysterious because Io's volcanism should resurface the moon at a rate of a few inches per year. One possibility is that there is a constant equilibrium between volcanic eruptions and unknown processes which might remove or cover volcanic debris. This would preserve the general appearance of Io's surface over long periods.

Io's surface looks remarkably different in ultraviolet (UV) light. Regions which look bright in visible light are dark in UV. The most likely explanation is that large areas of Io are covered with a sulfur dioxide frost. Because sulfur dioxide is a strong absorber of UV radiation, sulfur dioxide-rich areas are dark in the UV and bright in visible light.

Dr. Paresce points out that there also are regions that are bright or dark in images taken at both wavelengths. This suggests that the size of sulfur dioxide grains also may play a role in brightness. The reflectivity of sulfur dioxide is very sensitive to the grain size at ultraviolet wavelengths.

Amateur astronomer Jim Secosky made near-infrared images (7100 Angstroms) of Io which complement the FOC images by providing new constraints on Io's surface composition. Some models predict the presence of basalts and polysulfur oxide on the surface. But these dark compounds do not show up in Hubble's longer wavelength images. This further supports the model for Io's surface being predominantly sulfur and sulfur dioxide.

Secosky took HST snapshots of Io emerging from Jupiter's shadow to look for evidence of frost evaporation which might have formed on Io while it was chilled behind Jupiter. This would have been evident if Io was 10 percent brighter than while emerging from eclipse.

Secosky did not see any evidence of the "post-eclipse brightening" phenomena which have been reported occasionally by ground-based observers since 1964. Secosky thinks his negative results mean that the post-eclipse brightening effect, if real, may be driven by sporadic volcanic activity.

short bits (con't)

The researchers continue developing models of Io's complex surface structure and composition to account for Hubble's imaging and simultaneous spectroscopic observations. Because Io is the solar system's most dynamic and evolving moon, Hubble will continue to be used for detecting changes in Io's atmosphere and on its surface. - end -

NASA TO BEGIN SEARCH FOR INHABITED PLANETS

On Oct. 12, NASA will begin the most comprehensive search ever conducted for evidence of intelligent life elsewhere in the universe.

The search will use telescopes and antennas to detect radio transmissions from other planetary systems. The search will commence 500 years after Columbus landed in North America.

"In the first few minutes, more searching will be accomplished than in all previous searches combined," according to Dr. John Billingham of NASA's Ames Research Center, Mountain View, Calif.

"Over the past few decades," Billingham added, "scientific opinion has increasingly supported the theory that complex life may have evolved on planets orbiting other stars in the galaxy and the universe. In some cases, further evolution may have led to the emergence of intelligence, culture and technology."

Billingham, the program chief at Ames, said the High Resolution Microwave Survey (HRS) consists of two parts -- a Targeted Search and a Sky Survey.

The Targeted Search will use the largest available radio telescopes around the world to search the frequency range from 1,000 to 3,000 megahertz, seeking a variety of patterns that may indicate the presence of an artificially generated signal.

The Targeted Search will perform the most sensitive search ever conducted of solar-type stars less than 100 light-years distant. The Targeted Search begins from the world's largest radio telescope at the National Astronomy and Ionosphere Center's Arecibo Observatory in Puerto Rico. It is supported by the National Science Foundation and by Cornell University.

The Sky Survey will use the 34-meter antennas at NASA's Deep Space Network sites in the northern and southern hemispheres to scan the entire sky over the frequency range from 1,000 to 10,000 megahertz. The

Sky Survey begins at the Golstone, Calif., site.

"Because of the large increase in the area of sky and frequencies covered, a signal will have to be stronger to be detected by the Sky Survey," Billingham said. "But it could detect signals emitted in distant regions from directions that would be overlooked if the search were limited to nearby solar-type stars," he added.

Both elements of the HRMS are using specially developed digital signal processing systems capable of simultaneously analyzing tens of millions of radio frequency channels.

The HRMS is managed by NASA's Ames Research Center, which also is responsible for the Targeted Search project. The Jet Propulsion Laboratory, Pasadena, Calif., is responsible for the Sky Survey.

The HRMS is part of NASA's Toward Other Planetary Systems program in the Solar System Exploration Division, Office of Space Science and Applications at NASA Headquarters, Washington, D.C. - END -

Report from the Split Rail Festival

On September 25, 26, and 27, the Georgian Bay Amateur Radio Club had a booth at the Split Rail Festival in Flesherton, Ontario. This is our 19th consecutive year at this festival, thanks in large part to the generosity of Stan Guzonas (SWL) who shares his booth space with us.

This year we had five rigs on display (not counting the handhelds!). Stan brought an HF sideband rig. Brad Rodriguez (VE3RHJ) contributed an HF RTTY rig and an HF QRP rig. Walter Stoyko (VE3FFN) added rigs for 2M FM and 2M packet. Stan, Brad, and Walter also contributed their bodies to man the booth for the entire weekend.

Thanks to all the volunteer help, and the addition of a second HF antenna, we logged more on-air time than in previous years. John (VE3TXB) impressed the crowd on Saturday by working -- among others -- Barcelona on HF sideband. Walter (VE3FFN) followed on Sunday by working most of Scandinavia. Brad (VE3RHJ) made some sideband QRP contacts in the U.S. on Friday, and then for the rest of the weekend switched to RTTY, making several DX contacts during the worldwide RTTY contest.

Special thanks to the following: Paul Klekos (SWL) helped set up the booth and antennas, and assisted

short bits (con't)

in the booth on Friday and Saturday. John Apsitis (VE3TXB) handed out hundreds of flyers from the booth on Friday and Saturday. Bob Vary (VE3XOX) came down on Saturday to assist, and "talked up" ham radio to many booth visitors. And Barrie Doherty (VE3TUS) helped man the booth and meet the crowds on Sunday. Thanks, gentlemen, for improving our "presence," and making the weekend a little easier and a lot more fun!

SPECIAL EVENT STATION VG3W

The GUELPH AMATEUR RADIO CLUB (GARC) is using the callsign VG3W to commemorate REMEMBRANCE DAY. Operation is planned for 1500 to 2200 UTC on 10, 15, 20 and 40 metres using SSB and CW, from McCRAE HOUSE MUSEUM, birthplace of Col. John McCrae. At 108 Water Street in Guelph from Saturday November 7 to Wednesday November 11, 1992. Colonel John McCrae authored the poem "IN FLANDERS FIELDS". To receive a QSL card send SASE or IRC to Guelph Amateur Radio Club VE3ZM, P.O. Box 1305, Guelph, ON, N1H 6H9.

GHANA. Although not yet official, there is some good news from 9G land. The ban on amateur radio activity should be lifted January 15, 1993, when the country returns to civilian rule.

5X, UGANDA. Mario, is now signing 5X5MB. There are no QSN reports on the Ohio/Penn Network as of yet and no word on his DXCC status. QSL via DJ5RT. Doctor Ruppert, DJ5RT, will be returning in late November and will use the call 5X5WR.

DESECHEDO ISLAND. The same group that was on from Navassa Island, KP1, last year will be active from KP5 December 28 through January 4. Operations will be 10 through 160 meter CW, SSB and RTTY.

LEBANON. Walid, OD5ZZ, reports that there will be about 150 new amateurs who will be issued OD5 calls this week.

ANTIGUA. Joe, VE3BW, will be active from January 1 thru 28 as V2/VE3BW. Activity will be all bands, primarily CW. He hopes to get in on the CQ WW 160 CW Contest. QSL via VE3CPU, his old call.

NOVEMBER OPERATING EVENTS.

6, 7 and 8 JAPAN INTERNATIONAL DX CONTEST
7, 8 and 9 ARRL SWEEPSTAKES CW CONTEST
8 and 9 CANADIAN QST SUFFIX QSO AWARD PARTY
14 and 15 WORKED ALL EUROPE RTTY CONTEST
14 and 15 OK-DX CONTEST
14 and 15 ARRL EME COMPETITION
21, 22 and 23 ARRL SSB SWEEPSTAKES
28 and 29 CQ WW DX CONTEST CW

DX SHORTS.

JU830C Mongolia through December 31
JD1 Minami Torishima through January 14
8P9DR by NE8Z through November 3
FW by JA operator through November 4
OY/G4XRV November 1 through 5
T32BE BY WC5P November 24 through December 7
9G GHANA January 1993
E28DX December 10 through 12

New CARF STUDY GUIDE FOR THE ADVANCED QUALIFICATION

CARF is pleased to announce that the CARF STUDY GUIDE FOR THE ADVANCED QUALIFICATION has gone to press. Written by Canadians for Canadians, this latest manual from CARF speaks to the requirements of the Advanced Qualification and the new DOC Question Bank recently released. To obtain your copy contact

Ms. Debbie Norman, General Manager of CARF, at the address below or by telephone or FAX at (613) 545-9100. You may also purchase this book at the CARF table at any Amateur Radio fleamarket. CARF P.O.Box 356 Kingston, Ontario K7L 4W2

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SATELLITE NEWS

New OSCAR Satellites Coming

One of the major points brought out in the AMSAT-NA Space Symposium last weekend in Washington, DC was that there are 8 amateur radio satellites currently either under construction or will soon be launched. The following list gives the name of each satellite and their origin:

1) RS-15 AMSAT-UA 2) ARSENE FRANCE 3) UMAMSAT-1 AMSAT-XE 4) ITSAT AMSAT-IT 5) PHASE-3D AMSAT 6) TECHSAT ISREAL 7) SUNSAT AMSAT-SA 8) SEDSAT-1 University of Alabama Huntsville, AL

As many of the speakers at the Space Symposium mentioned, the next two-to-three years will be a very exciting time for OSCAR satellite users.

Satgen 186 Satellite Stabilisation Part 1 by GM4IHJ 17th Oct 92

You can only hear a satellite signal strongly, if you are in its antenna beam. So satellites have two problems. Firstly there is no such thing as an omni directional antenna - most so called antennas cover at best only one plane Eg horizontal and have a very varied pattern in the vertical plane. Secondly a satellite left to itself tumbles and wobbles about the sky rarely pointing at the same place twice. So we need to stabilize or fix the orientation of the satellite, either relative to the Earth for sats in low orbit, or relative to the stars for sats in high orbits. The simplest satellites use passive magnetic stabilisation, whereby one or more permanent magnets inside the sat, interact with the Earth's magnetic field turning the sat so that its internal magnetic poles align towards the earth's magnetic pole. By this means Pacsat with 4 stub antennas one on each side of the -Z face, points face at the earth when it is near the north magnetic pole, and gives somewhat less good but useful alignment when it is above the temperate zone of the Earth's northern hemisphere. But please note that this system means the -Z face and its antennas point away from the earth when the sat is over the southern hemisphere. So when Amsat Argentina built Lusat they put the sat magnets the other way round. Magnets do not however give total protection from satellite wobble. One way to get a stable wobble free satellite is to spin it like a Top or gyroscope. So in addition to their magnets Pacsat, Webersat, Lusat and Dove are spun. The mechanism producing the spin is purely passive. The 4 separate antenna blades are painted black on one side and white on the other. When the satellite is in sunlight Solar photons hit these antenna blades, with at any one time the sun getting a clear view of the white side of one blade and the black side of the one on the opposite side of the -Z face. When a solar photon hits a black face it is absorbed, but when it hits a white face it is reflected. The reflection produces more thrust than the absorption, so the satellite slowly spins up. The spin is not fast enough to fix satellite attitude in space but it does damp out much of the tendency to tumble. Uosats (Uo14, Uo22, and Kitsat) use a more sophisticated (and expensive) stabilisation system called gravity gradient stabilisation. This is achieved when several days after launch the Surrey sat is commanded to unreel a weight on the end of a long cable. This has the effect of using the earth's gravitational field to keep the line formed by the antenna pointing where ever they are around the earth's north or south hemispheres. With the bigger satellites to be described in the next issue of satgen, the satellites have the capability to be spun round at quite high speed, this brings some advantages and some, perhaps, unexpected problems.

Satgen 187 Satellite Stabilization Pt2 by GM4IHJ 24th October 92

The Phase 3 satellites Oscar 10 and 13 go out to a distance of 36000kms from the Earth in elliptical orbits where the sat moves quickly when near Earth at perigee orbit low point, but moves very slowly, loitering for up to 6 hours near the apogee high point of the ellipse. So when near apogee the sat is roughly 36 times further from Earth than say a typical low altitude near circular orbiter. To cover this long signal path requires bigger antennas at the ground station and, on the sat. But this means a narrow beam antenna at the sat. So the must be stabilized to point accurately at the earth, to keep the earth inside the sats antenna beam. This kind of stability can be achieved by spinning the satellite at quite high speed Eg 20 to 30 rpm. So the Phase 3 sats use

magnetic torquing coils to build up the spin. This requires careful energising of the sats internal coils and is not a situation which can be changed quickly. Oscar 13 launched into a situation where it was spinning the wrong way round. But it proved safer to spin it up the wrong way and leave it that way, than to de spin it through the point where it had no spin then hopefully try to start it spinning the other way. Because at the point of no spin it would probably have been uncontrollable.- noting that you need it to point accurately earthwards to order it what to do next, and this is impossible if it is wobbling all over the place and not looking at earth. So Oscar 13 spins the wrong way and it also suffers from spin modulation of its signals, because the sat is too small a platform to provide a regular circular 2m antenna beam . So as it spins you get 3 signal peaks and 3 signal lows per rev. Geosats also sit out at 36000km, but they carry fuel tanks and thrusters which can be used to keep the satellite spinning the correct way for the desired stability. But spinning the geosat introduces an interesting problem. Where do you put the sat antenna so that it points steadily at earth and does not spin ? The answer is to mount the antenna above a shaft through the satellite spin axis, and to de spin this shaft and antenna using an electric motor turning the shaft at a rate and direction which exactly opposes and cancels the sat spin at the antenna. This is possible because the heavy satellite spinning one way is not upset by the much lighter antenna spinning the opposite way. This is not the whole story. Both Phase 3 and Geosats have additional stability problems . Part 3 in the next satgen reports what we will have to do , if we wish to keep long range satellites stable with respect to the earth , for periods of ten years or more,so that we can recoup their very high building/launch costs.

Satgen 188 Satellite Stabilization Pt3 by GM4IHJ 31st Oct 1992

As mentioned in sgen187. When a satellite goes more than 20000 kms from the earth , its stabilization is very important if it is to keep its high gain antennas pointing at the earth. Active magnetic, or, thruster, induced spin, will keep it pointed at earth for some time , but if the satellite is to repay its huge building and launch costs , it must be stable for many years. It is this long term requirement which causes the problems, because the Sun and the Moon both exert gravitational force on the satellite, pulling its orbit so that either or both, its orbit eccentricity, and, or, its orbit inclination with respect to the equator , change with time In commercial satellites going beyond 20000 kms, it is common practise to use very large amounts of thruster fuel over a 6 year life. Just to keep the satellite earth pointing and on its designated orbit station. This is very expensive and commercial companies are now asking for 10 to 12 years of satellite on station life expectancy, in order to recoup the enormous cost. In the Oscar 13 Phase 3 case we cannot presently counter these solar and lunar effect, once the satellite is up, because we have no correction thrusters. So where do amateur and commercial satellite builders go from here ? In the Amsat Phase 3 case, we can probably improve things by carefully arranging to launch to an orbit which is least likely to be upset by solar/lunar perturbation, BECAUSE THE PHASE 3 ORBIT IS NOT RIGIDLY FIXED Orbits where the Sun does not lie along the extension of the orbits major axis offer a rough approximation to what we need. In the commercial case however, most of them are rigidly fixed geosats . Required to stay well within a degree of their designated equatorial station. Despite the Sun pulling them up and down in latitude with its seasonal change of position , or, the irregularities in the gravity field over the equator pulling them east or west . In this commercial situation the answer seems to be a more economic type of thruster. Today, most sat thrusters use UDMH Unsymmetrical DiMethylHydrazine. This can be stored relatively safely without much leakage (unlike most rocket fuels). But when this complex liquid is fired through a hot grid made of a suitable metal catalyst, the UDMH breaks up into two components which interact explosively producing thrust. But this method use a fuel of low atomic weight , so you use a lot of fuel to get the required thrust . What is needed is a high atomic weight fuel such as Xenon or Ammonia. These are not explosive , but if they are ionised they can be propelled at very high speed in a controlled manner by a suitable electric field. To get the Press ENTER to continue (A to abort) -> power for the field we need large solar panels. Fuel usage is low because the Sun provides most of what we need. It makes sense to equip not only commercial geosats but also Amsat Phase 3 birds with these ion thrusters. So Phase 3D designers are considering using them aboard this next launch.

Comet Swift-Tuttle (reported satgen172 in respect of Perseids meteor shower) has finally reappeared and is presently visible in binoculars in the constellation of Hercules in UK NW evening sky . 73 de GM4IHJ @ GB7SAN



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VE3AEO TED 376-9004

HF BEAM - BUTTERNUT MINI-BEAM, IN ORIGINAL CARTON, NEVER USED \$200.00

DENTRON DIPOLE ANTENNA- ALL BAND HF FED WITH 450 OHM LADDER LINE \$35.00

VE3CUV ROSS 599-3870 8A.M. TO 4P.M.

1 - **SWAN SOLID STATE TRANCEIVER** 80-10 SS-200-1GB, C/W POWER SUPPLY, SWR METER, DESK MIKE \$225.00 OBO

1 - **SIMPSON VOM** \$40.00

1 - **HEADPHONES** C/W CASE \$12.00

1 - **HEATHKIT CAPACITANCE METER** \$12.00

VE3DSS DANA 416-763-1761

HF TRANCEIVER ICOM IC-720A 100 WATTS HF COVERS ALL WARC BANDS, SPEECH PROCESSOR, FAST BREAKIN, NOISE BLANKER, OFFSET AND PASSBAND TUNING INCLUDED. C/W MIC AND SERVICE MANUAL \$550.00

VE3HIP IAN 371-5479

REFLECTED POWER METER (SWR METER)

HEATHKIT MODEL HM15

10-160 METRES SO-239 CONNECTORS \$20.00

WANTED

VE3BZC ROSS 371-4326

COIL STOCK - 15 TURNS #12 WIRE, 2 1/2" IN DIAMETER, 6 TURNS / INCH

VE3TSA TOM 371-9805

CARTOONS / ARTICLES FOR FEEDBACK.... I NEED SUITABLE CARTOONS AND/OR ARTICLES FOR USE IN FEEDBACK

MEMBERSHIP DUES CAN BE PAID ANY TIME BETWEEN SEPT 1ST AND DEC 31ST. THE RENEWAL FOR A CURRENT MEMBER IS \$20.00

GEORGIAN BAY HAMFEST

WELL HERE WE GO! ANNOUNCING THE VERY FIRST GEORGIAN BAY HAMFEST...SPONSORED BY THE GEORGIAN BAY A.R.C. ON THE 28th OF NOVEMBER AT THE GEORGIAN YATCH CLUBHOUSE...THE DOORS OPEN AT 8 A.M. FOR SETUP....9 A.M. FOR EVERYONE ELSE....THERE ARE ABOUT 12 TABLES AVAILABLE WHICH CAN BE RESEVED BY CALLING VE3TSA BUT YOU HAD BETTER PLAN ON BRINGING YOUR OWN... THE GEORGIAN YATCH CLUBHOUSE IS LOCATED IN OWEN SOUND ON 3RD AVE WEST IMMEDIATELY NORTH OF THE MARINEVIEW RESTAURANT. TURN EAST ON A DRIVEWAY BETWEEN 25TH AND 26TH STREETS WEST.... 3RD AVE WEST IS ALSO KNOWN AS THE EDDY SARGEANT PARKWAY. THERE IS NO CHARGE FOR TABLES OR USE OF THE HALL AND THE ADMISSION FEE IS VOLUNTARY, SO BRING YOUR MOST PRIZED JUNK AT 8 AM AND SET IT UP FOR US ALL TO OOH AND AHHH AT.