JUNE 1989

THE GROUNDWAVE

NO FIELD DAY!

UNLESS WE GET VOLUNTEERS
CALL PAUL COOPER, VE3JLP

NEXT MEETING WILL BE HELD
WEDNESDAY, JUNE 7, 1989

Club Call VE3RC Repeater VE2CRA

AMSAT

The Ottawa Amateur Radio Club,Inc., Box 8873, Ottawa, Ont., K1G 3J2			
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Secretary	Mike Hughson, VE3DVH	835-3093	
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Repeater Chairman	Harrie Jones, VE3HYS	739-9365	738-2372
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THE OTTAWA AMATEUR RADIO CLUB, INC. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area; and to the advancement and achievement of club members.

REGULAR MEETINGS of the OARC, Inc., are held on the first Wednesday of each month (except July and August) at the National Research Council Auditorium, 100 Sussex Drive, Ottawa, at 2000 hours. A bulletin board is available for posting notices of interest to other members about 1915 hours. Further details about each meeting is elsewhere in this publication.

PACKET RADIO MEETINGS are held at 19h30 on the last Thursday of every second month beginning in September, at the Museum of Science and technology, St. Laurent and Lancaster Roads. This is an OARC technical meeting open to all who have an interest in packet radio.

THE OARC EXECUTIVE normally meets on the second Wednesday of each month at 1930 hours. Contact the President to confirm the date of the next meeting.

DEADLINE FOR COPY is the second Wednesday of each month. Make yourself better known to fellow members and other amateurs, too, by giving us an article, technical or otherwise, relative to our hobby.

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or other publications provided that proper credit is given to the author and to the OARC, Inc.

JUNIOR MEMBERSHIPS - To encourage young people to join the club and to participate in amateur radio, the club is opening a junior class of membership. Dues will be at a 50% discount but the junior member must pick up his/her copy of the Groundwave (preferably at the meeting).

RADIO AMATEUR CALL BOOKS are available at many local libraries. Ask at the information desk.

SAFETY BELTS, 2-METER RIG AND AN ENGRAVING PENCIL are available for loan to club members. The 2-meter rig may be borrowed by members who are hospitalized. The engraving pencil (to mark valuables for identification in case of loss or theft) and the safety belts with pole straps are available to any members. A $100 refundable deposit is required for the belts. Contact the President for the 2-meter rig or the engraving pencil; and Paul, VE3ICV, at 820-6643 (West End) or Brian, VE3JKZ, at 523-1535 (East End) for the belts.

THE CAPITAL CITY NET meets every Monday at 2000 hours on the Club Repeater VE2CRA (146.34/.94) to pass traffic and to make announcements of interest to amateurs in the National Capital Region.

PACKET RADIO VOICE NET meets following the Capital City Net on VE2CRA at 2040 hours. This is an informal net to answer questions about packet radio, pass along operating hints and provide information for future packet operators.

THE SWAP NET is a service provided and conducted by Ed Morgan, VE3GX. This feature appears on the Capital City Net, noted in the foregoing paragraph. To list items and make inquiries, call Ed Morgan at 733-1721.

POT-HOLE NET is a SSB/HF net sponsored by the Ottawa Valley Mobile Radio Club, and conducted every Sunday at 1000 hours on 3.760 Mhz. All amateurs are welcome to check in. The Swap-Net is a regular feature.

POT-LID CW NET is an informal slow-speed CW net sponsored and conducted by Ed, VE3GX, and meeting every Sunday, except during July and August, at 1100 hours on 3.620 Mhz, to promote interest in CW and CW procedures.

REPEATERS

VE2CRA Voice 146.94/34 443.300/448.300
VE3OCR Packet 145.01(sx) Inter city links
VE3OCR Packet 145.07(sx) Local Area net for QSO and Packet BBS.
For further information, please contact repeater chairman.

MINUTES OF THE OARC GENERAL MEETING OF MAY 3, 1989

The meeting was called to order by the President, Paul, VE3JLP, who welcomed visitors. These were George, VE3PWS, a white caner; Mike, VE3NMZ, from London; and Ajit Fisher who is studying towards becoming a ham. The minutes were moved/seconded by Bill, VE3UD/Marcus, VE3MDL. By way of correction, Doug, VE3CDC, indicated that the announcement re CARF reference was his own and not that of the Canadian entity.

Dan, VE3EBI, for CARF stated that Ontario amateurs could use the call CH3 from 7 June to 7 July. The new radio act in the form of Bill C6 will be before the house and all amateurs should press their MPs for speedy passing. A CRRL report was not available.

The directory was available at break time from the membership chairman. These were free to members, $3.00 for extras and to others. A round of applause was extended for the staff involved with the preparation of directories.

Clare, VE3NPC, spoke on amateur satellites as our feature presentation. Clare has been actively involved with this mode of communication mainly utilizing 2M/70cm frequencies and SSB transmission.

Several amateurs spoke of their Dayton 89 experiences. Paul, VE3JLP, Craig, VE3KKU, Jim, VE3IQ, Marcus, VE3MDL, and Doug, VE3OCU, all found many things of interest with insufficient time to see everything.

A volunteer coordinator is required immediately for Field Day; if there is any significant delay, the event will not be held. Chris, VE3PAE, presented slides showing excerpts from past field day activities.

Art Stark, VE3ZS, was nominated as an honourary member of the OARC for his many years of tireless effort towards the promotion of amateur radio.

A nominating committee consisting of Dave, VE2ZP, assisted by Doug, VE3OCU, will conduct a telephone campaign towards selecting candidates for the OARC 1989/1990 executive.

It was announced that the next meeting will present a packet radio demonstration and the meeting was adjourned on motions by Don, VE3ATJ, and Doug, VE3OCU.

DIRECTORIES

Directories will be available at the June meeting. First copy is free for members; second copy is $3.00. If you cannot pick up your directory, send a SASE to the Club (a $2.00 stamp is required) - members only.

CONGRATULATIONS

Congratulations to Joan Powell, ex VE3FVO, on her new 2-letter call, VE3ZC. Joan is a former Club president.

WANTED - a volunteer to co-ordinate a door prize regularly at future Club meetings.

RFI NOTE

We note that Ralph Cameron has recently cleared up another case of RFI. Some neighbours of a ham in the Glen Cairn area were having problems with their telephones. (Ed.)

JUNE MEETING

Demonstration - There will be a hands-on demonstration of packet radio by Doug Yuill, VE3OCU.
Elections - will be held this meeting.

COMMUNIQUE ON AES WIND PROFILER ISSUED BY AD HOC COMMITTEE ON UHF UTILIZATION

Author: Paul A. Smith, VE3PS
Date: 89-02-12

The core group of the Ad Hoc Committee on UHF Utilization is comprised of representatives of the following organizations:

CRRL, CARF, SAAC, VE3ULR Repeater Network, Toronto FM Communications Society.

Environment Canada AES places considerable importance on the Wind Profiler Program due to its ability to provide read-time research data on wind patterns, particularly in the study of violent storm conditions such as tornadoes and hurricanes. The Department of Communications (DOC) has had outstanding since 1985 a frequency request from AES for a Wind Profiler operating in the 400-500 MHz band.

DOC has just now assigned a frequency of 441.0 MHz for the first Profiler, to be located near Egbert, Ontario. The Amateur community initially heard indirectly of DOC's intention to allocate a 70 cm frequency for the Profiler close to two years ago. The Ad Hoc Committee investigated and submitted its opposition to this, proposing a frequency of 404.37 MHz instead.

After a long technical investigation and negotiation with DOC, our latest report on frequency allocation for the Wind Profiler, submitted September 21, 1988, had continued to endorse the use of 404.37 MHz, based upon all available facts at the time. It also suggested, however, that our analysis indicated a potential for interference of SARSAT if and only if data on the AES Profiler(s) (listed as "assumed" within the DOC report RP-135) were valid.

The DOC contacted AES during its review of our report and a meeting was convened November 23. In attendance at that meeting were DOC, the Ad Hoc Committee core group and a representative of the Southern Ontario and Western New York Repeater Council.

DOC confirmed that the "assumptions" were in fact correct, as AES intends to use the Profiler(s) for the research (versus simple weather forecasting as in the U.S.). This requires much greater power and narrower pulse widths. The resultant greater bandwidth moves interference to SARSAT from the realm of "potential" to "real". With this knowledge, and with a concern for the security of the SARSAT program, the Ad Hoc Committee could no longer continue to endorse a 404.37 MHz allocation for the Profiler(s).

During the lengthy negotiation, the Ad Hoc Committee had exhaustively examined possible alternatives, but had been unable to locate any acceptable 400 MHz frequency outside the 70 cm band. NB: the 430-450 band is RADIOLOCATION Primary, AMATEUR Secondary!

Extensive technical evaluation involved the entire Ad Hoc Committee and consultation with special interest groups had earlier determined that 441.0 MHz would be the least disruptive 70 cm frequency for the Profiler at Egbert. DOC has concurred and allocated 441.0 MHz.

The meeting concluded with discussion of EAS's stated willingness to co-operate and work with the Amateur community to minimize the potential interference, by aligning their antenna system in a favourable direction, building berms, etc., as may be required.

The Ad Hoc Committee will be contacting EAS in the near future to follow up.

DOC's statement follows:

SUMMARY
AES CLEAR AIR DOPPLER RADAR
441 MHZ FREQUENCY ASSIGNMENT

In 1985, the Atmospheric Environment Service (AES) approached the Department of Communications (DOC) for advice as to which 400 MHz frequency band would be acceptable for their proposed Clear Air Doppler Radar (CADR). The CADR would be installed at various locations and would be used to experiment in the ending of wind velocity versus height data over a range of elevations from near the ground to the maximum level possible. As the CADR was determined to be a radiodetermination/radiolocation device in accordance with the I.T.U. definition, AES was advised that the 430-450 MHz band, allocated to RADIOLOCATION on a primary basis, would be appropriate.

AES subsequently submitted applications to operate an experimental CADR in the 430-450 MHz band as part of their newly established facilities located at Egbert, Ontario. At that time, the frequency 433.5 MHz was tentatively selected for CADR use.

To respond to the concerns of the amateur community on this matter, a working Ad Hoc Committee comprised of various amateur representatives, including the two national organizations (CARF, CRRL) was formed to formulate recommendations as to the selection of a suitable frequency assignment for the proposed radar system which would have the minimum impact on amateur operations.

During the past year, several meetings between the Department and the Ad Hoc Committee took place to discuss the various technical issues in this matter. There meetings served to explain and clarify the technical parameters of the radar, and to discuss the technical reports presented by the Department and the Ad Hoc Committee. As a result of this extensive dialogue, consensus was reached which recognized the adverse effect that could result to the SARSAT system if the CADR was accommodated in the 401-406 MHz band. In view of the safety aspect associated with the SARSAT system, it was recognized that the only suitable alternative was the 430-450 MHz band.

In conclusion, the Department accepted and concurred with the committee's recommendation of 441 MHz as the most suitable frequency assignment within the 430-450 MHz band. AES has been advised of the assigned frequency of 441 MHz, and have indicated a willingness to work closely with the amateur fraternity to define and evaluate measures to minimize mutual interference to both services.

de Toronto FM Communications Society Inc. Newsletter

EXPERIMENT

A group of 8 Ottawa area amateurs will be running experiments this summer on the 10 GHZ band (10.0-10.5 GHZ). Surplus distance measuring equipment using the polaplexer principle has appeared through government disposal. The rigs run approximately 25 MW to a self-contained dish antenna - tunable Klystron 10.04-10.42 GHZ, FM modulation, full duplex. Powered from a 12V car battery, the rig is quite portable (25 lbs.). A hastily rigged test from my driveway (with rig on a stepladder) to Ray, VE3FN mobile, at the Sportsplex, proved an easy 5 KM path. Wait 'til I get on the roof this summer.

de Ralph, VE3BBM

DATES TO NOTE

Central Ontario Amateur Radio Fleamarket
June 10, 1989, 8:00 a.m. to 2:00 p.m. at "Bingeman Park", 1380 Victoria Street North, Kitchener, Ontario.

Ontario Hamfest
July 8, 1989, at Milton Fairgrounds.

THE VE3AUI TWO AND ONE HALF WATT 80 METER TRANSMITTER

The diagram accompanying these words shows the result of a little experimentation in QRP transmission at VE3AUI. You will see that the transmitter looks much the same as all the other QRP articles that you have read. After all, how much variation can there be in a crystal-controlled, three stage rig?

There are some features, however, that might be deserving of comment.

1. I hate to make inductors! .....Especially when the article specifies some kind of Aidon inductor that I don't have. So, where possible, I use ordinary pi-wound RF chokes, marked as RFC in the diagram. These should be 2.5 mH chokes, or if you don't know what they are, they ought to look like they would be self resonant well below the 80 meter band.

2. I also hate hunting all around for values of small parts to fit the contents of somebody's QRP article. You will note that in all but four instances, the capacitors used are 0.1mfd. The resistors have to vary a little more, but there are still duplicates, and the rest are not hard to find. Likewise, with the transistors. All but the final are 2N2222A. These are 35 cents each at Forest City Surplus. The final could be the transistors specified, or what you have. The ECG equivalent of the final is an ECG 123.

3. Parts T1 and L1 caused me the most problems. T1 could well be a tuned transformer, and probably should be. But I want to box this little monster up and not have to mess with it, so I didn't end up with tuning at any stage. The point at T1 is to get lots of RF transfer, and achieve a healthy step down in impedance. If you can't duplicate what I have specified, find a good core, ring or straight, and experiment. I have an idea that ferrite loopstick cores from transistor AM radios would work here on 80 Meters. If you use a ring core, space the runs of the secondary around the full circumference of the ring.

L1 and the two capacitors near it form the filter that this thing requires to stop it radiating RF all over the spectrum. Make up the 1750 pf capacitor by paralleling values together. Some kind of tuned circuit in this area of the circuit might also function, if you want to try it.

4. You will note the parallel drivers. This is a lucky accident. One transistor here draws about as much current to the driver stage as two, but I found that by paralleling two 2N2222A's, I got more drive. I think this is because two together match into the final better than one.

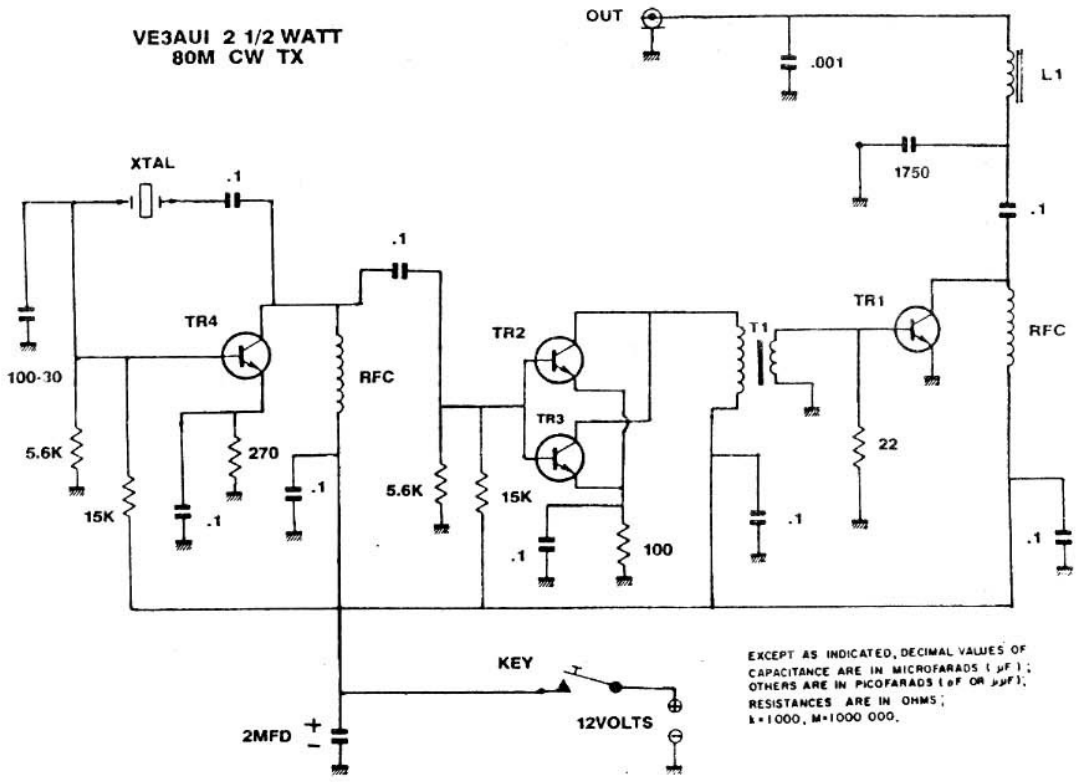
This is not a fancy rig, but in a short while, I have worked both coasts and several places between.

Happy Building,
Bill Skidmore, VE3AUI
LARC Bulletin

BUILDING NOTES

RFC	2.5 mH Choke
L1	20 turns of #24 wire on FT50-2 core.
T1	35 turns of #24 wire on FT50-2 core. Link is 10 turns of #18 wire spaced over the primary.
XTAL	Any 80m fundamental crystal
TR1	MPS U02 or 2N2102
TR2	2N2222A
TR3	2N2222A
TR4	2N2222A

(Diagram on opposite page.)



Packet Radio

Amateur Packet Radio

What is Packet Radio?

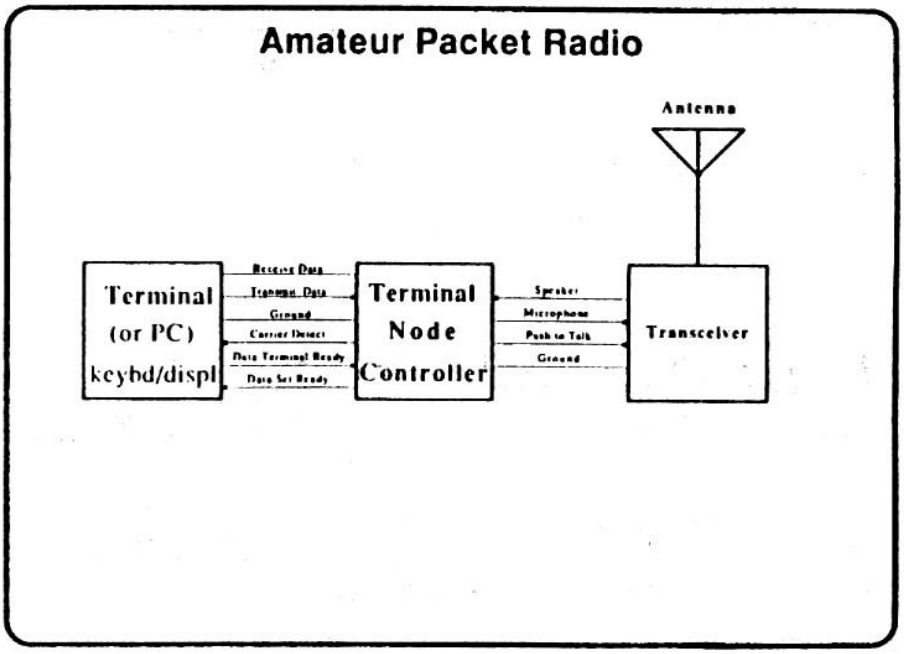
- o A digital communications mode in Amateur Radio that provides error-free communications
- o May be used on HF, VHF, UHF (the speed goes up with frequency)

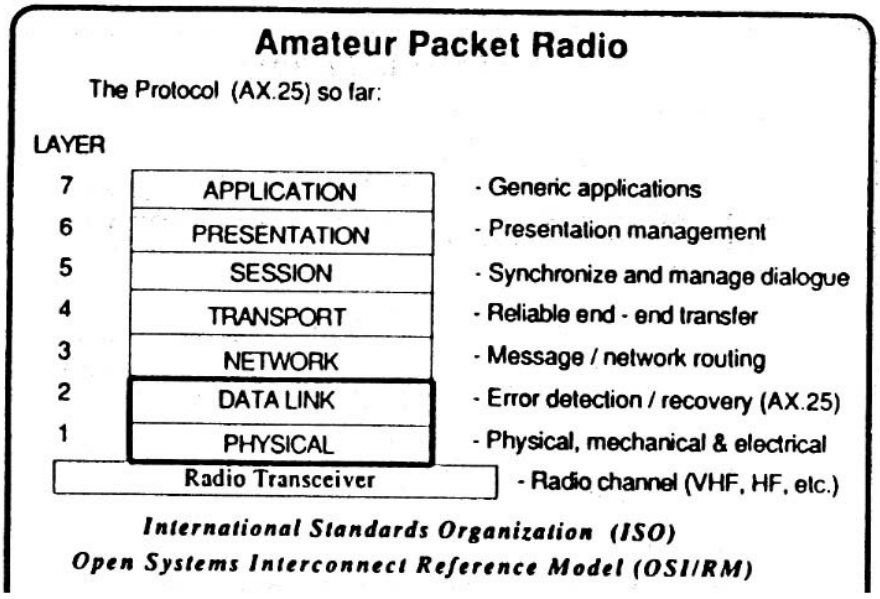
What do I need for Packet Radio?

- o A transceiver (SSB for HF, FM/PM for VHF)
- o A terminal or computer (with an interface for the TNC)
- o A Terminal Node Controller (the thing that does most of the work)

What's it used for?

- o QSO's just like RTTY but no errors (except those you make typing)
- o Messaging: Bulletin boards for personal and broadcast mail
- o Formal traffic (rapidly replacing CW traffic nets - no errors, auto deliv'y)
- o File transfer (Computer to computer, ASCII, binary, whatever)
- o High speed multihop data (whatever you choose) communication


Amateur Packet Radio
Antenna
Terminal
(or PC)
keybd/displ
Terminal
Node
Controller
Transceiver


Amateur Packet Radio
The Protocol (AX.25) so far:
LAYER
7 APPLICATION - Generic applications
6 PRESENTATION - Presentation management
5 SESSION - Synchronize and manage dialogue
4 TRANSPORT - Reliable end - end transfer
3 NETWORK - Message / network routing
2 DATA LINK - Error detection / recovery (AX.25)
1 PHYSICAL - Physical, mechanical & electrical
Radio Transceiver - Radio channel (VHF, HF, etc.)
International Standards Organization (ISO)
Open Systems Interconnect Reference Model (OSI/RM)

Amateur Packet Radio

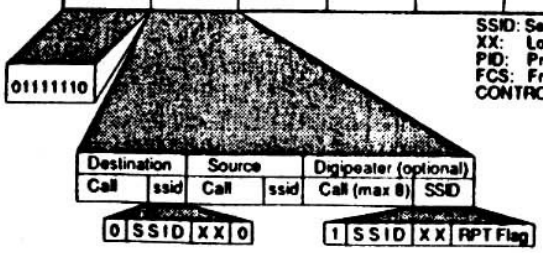
Packet Framing:

Unnumbered and Supervisory Frames:

Flag	Address	Control	FCS	Flag
8	112 - 560	8	16	8

Information and Unnumbered Information Frames:

Flag	Address	Control	PID	Info	FCS	Flag
8	112 - 560	8	8	≤ 2048	16	8



SSID: Secondary Station Identifier
XX: Local Use (not yet defined)
PID: Protocol Identifier Field (Network Layer)
FCS: Frame Check Sequence (CRC)
CONTROL: SABM (Set Asynch Bal Mode)
DISC (Disconnect Request)
DM (Disconnect Mode - resp)
UA (Unnumbered Acknowledge)
FRMR (Frame Reject)
UI (Unnumbered Information)
RR (Receive Ready)
RNR (Receive Not Ready)
REJ (Reject)

Amateur Packet Radio

Operating Procedures and Notes

- o Listen first (like with any amateur radio activity)
- o Make sure the radio's squelch and the TNC's threshold are set right (or you will clobber other users of the frequency). Remember, packet uses one frequency to support many connections at the same time with no interference.
- o If you want to carry on a conversation with another ham, it's nice to have a terminal program that has chat mode; that's a split screen with your side of the QSO on one half of the screen and the other side on the other half. (you need to have ECHO set OFF in the TNC).
- o Great for public service, formal traffic and emergency communications
  - everything is small and portable
  - fast, reliable, error-free
  - a record of all messages is possible (no more transcription)
  - you can take it with you in a briefcase
- o Still a lot of work needed to make connecting easier (networking)
- o Enjoy! It's the new RTTY!

de Newsletter of the Hamilton Amateur Radio Club

A PACKET FROM TUCSON

by Gord VE3JMT

About thirty-five years ago, I participated in the planning and launching of a high traffic teletype relay system based on the use of punched paper tape. Relaying was accomplished by picking up the incoming paper tape at the receiving point, reading the typed leader for a destination, then carrying the tape over to the transmit point. If circuits were busy and incoming traffic piled up, the operator would hang the received tape on a sorting board where it would sit until someone moved it. Traffic moved night and day by line and by radio to three continents. Why then should I feel intimidated by the packeteers? Smart ass kids, hmph!

The editor of this paper has handed me a fifteen page document with the suggestion that I might cut it to a page and half. This may not be a completely satisfactory solution to the space problem but the original document is available to anyone who would care to spend summer vacation translating this techspeak into one of our official languages.

The subject is packet radio. The vehicle is a very quick message that left somewhere at 20:35 and arrived somewhere else at 20:36 the same day. This feat took place on either the 7th of March or the 3rd of July, 1989. Makes you think, doesn't it? The sender was located at dgbt and the receiver at carleton.bitnet. The content reports on the proceedings of the 1989 TAPR annual meeting (Tucson Amateur Packet Radio Corporation) as noted by Paul KB5MU in the SANDPAC Newsletter.

Phil Karn KA9Q spoke of recent developments in TCP/IP. The IP refers to "Internet Protocol." This should probably be protocols since there is a hierarchy and a very long list of companies who sell or support TCP/IP products.

There is a reference, brief and unconfirmed, of a presentation to the Board of Directors of TAPR in closed session about "the Net Ripoff." Somebody will be contacting NORDLINK for their side of the story. Intriguing, what?

Space precludes anything more than a brief reference to a few of the highlights of the TAPR meeting. For sensible reasoned explanation we suggest that you talk to Doug Yuill VE3OSL at 230-1740 on any of the following topics. ". . . Ethnet device drivers, Turbo C version 2.0 compilers replacing Aztec C, TexNet Network Management System, MicroSat Project, DOVE (Digital Orbiting Voice Encoder, Rocket launch of small satellites, MicroSat power modules, MicroSat software, HF BBS systems, availability of KA9Q Net Software, K3MC's Awesome I/O Board, KA9Q's 56 Kbps modem and modem comparisons, TAPR hardware development including circuit boards designed to improve performance of TMC's demodulator, Jim Vogler WA7CJO and 10 GHz EME, etc.

The document ends with an account of the discussion concerning the no-code license proposal. The statement of a packet group's purpose in seeking a no-code license category is threefold:

a) to ensure that crucial spectrum allocations in VHF and up are utilized and remain available to the Amateur Radio Service.
b) to lure more technically competent people into Amateur Radio, and
c) To lure more young people into Amateur Radio to ensure the future of the service.

HAVE A SAFE AND HAPPY SUMMER!

NO "BACK PAGE" ON THIS ISSUE
mk VE3FFK