HAPN-1 SOFTWARE ENHANCED

The HAPN-1 packet-radio adapter software has a fresh look! The long-awaited multiconnection software is now available, the AX.25 software package has been extensively rewritten and new programs have been added to the library. [HAPN-1 is a hardware and software package developed by the Hamilton (Ontario) Area Packet Network (HAPN) for the IBM PC and its clones that consists of a TNC on a PC card that is installed in a computer expansion slot and a variety of software to support the hardware.]

Software Reorganization

The AX.25 Level 1 functions have been broken out of the m25 program and placed in a device driver. The device driver, hap1.sys, is loaded from your config.sys file and becomes part of DOS. It manages all of the hardware functions associated with the HAPN-1 hardware. This greatly simplifies m25 and makes it possible to extend it to support new features such as multiconnections. In addition, the device driver is similar to a TNC running KISS code, which makes it suitable for use by other applications that already contain Level 2 functions, such as TCP/IP.

Multiconnect

M25 can be customized to provide one to four concurrent connections or sessions (HAPN has found that two or three sessions are sufficient for most users; fewer sessions means that m25 uses less memory). In addition to the connected sessions, there is one special session called the monitor session that is active all of the time. It permits you to monitor the channel even when connected.

The c25 program supports multiple sessions by allowing you to switch from one session to the next by pressing a function key. Information about the session, such as session identification and the connected station's call sign, are provided for each session, making the use of multiple connections very simple and easy to use. File transmission and reception operates in all sessions as do the file transfer utility programs.

A new "calls heard" dialog is now available in c25. It displays the last ten different call signs heard in the monitor session with the time when they were last heard.

New Applications

The Bulletin Board and Utilities diskettes now contains XPacket and YAPP file transfer programs, in addition to the old sf/rf programs. These new programs are compatible with PBBSs that support these protocols making it much easier to exchange files with them.

There is also a weather facsimile program for receiving WEFAX images from various sources on HF and displaying them on your PC. All that is required is that you apply the received audio from your HF receiver to the HAPN-1 and tune in one of the WEFAX transmissions on HF. No hardware changes are required.

HAPN also provides a NET/ROM utility called SIGNON for remotely accessing and updating parameters in the node. The program automatically performs the password sign-on procedure for NET/ROM SYSOPs. After the sign-on procedure, changing parameters is done by an editor showing the formatted parameters. Non-SYSOPs cannot change the parameters, but are still able to browse through them and learn more about the network. Formatted setups can be printed or saved to disk.

TCP/IP

A version of the TCP/IP program NET.EXE is available from HAPN that supports HAPN-1 using the new device driver hap1.sys. This version is very reliable and overcomes all the HAPN-1 problems users were having with the released version of NET.EXE.

Incompatibility With MSYS Multi-User PBBS

An incompatibility between the HAPN-1 software and the MSYS PBBS exists. The symptom is the uncontrolled display of headers when an MSYS frame is received. This occurs because MSYS transmits incorrect SSID bytes in the AX.25 header. Most TNCs have been programmed to ignore the unused bits and function normally, however, the HAPN-1 software expects the bits to be set according to the protocol and malfunctions when incorrect frames are encountered. This problem has been fixed in the current release of the software.
Software Availability

Registered HAPN-1 owners can order software updates for $5 US per diskette. The base AX.25 package, formerly Diskette #1, now requires two diskettes instead of one. The new programs described in this newsletter are on the Utilities diskette.

The new software updates are available as follows:

- HAPN-1 AX.25 programs and documentation (2 disks) $10
- HAPN-1 AX.25 PBBS.......................................... $5
- HAPN-1 AX.25 Utilities...................................... $5
- HAPN-1 TCP/IP................................................ $5

Please include $5 per order for shipping. Send orders to:

HAPN
Box 4466
Station D
Hamilton, Ontario
Canada L8V 4S7

KANTRONICS RF MODEM COMING SOON

Kanronics, is expected to introduce an inexpensive 2-meter 9600-baud transceiver and TNC combo shortly. Dubbed the "DVR-2," the unit combines a 2-watt, 2-channel, crystal-controlled 2-meter transceiver with a TNC and a 9600-baud modem, all for under $200.

8th ARRL COMPUTER NETWORKING CONFERENCE

The 8th ARRL Computer Networking conference will be in Colorado Springs, Colorado, on October 7 at the US Air Force Academy. This year's hosts include: Tucson Amateur Packet Radio (TAPR), Academy Amateur Radio Club, USAFA Cadet Radio Club, Rocky Mountain Packet Radio Association (RMPRA) and the American Radio Relay League (ARRL). Numerous papers on TCP/IP and ROSE Networking have been received for this year's conference. This year's presentations will continue the story of amateur packet radio and AMTOR evolution. This is one conference you don't want to miss. It's not too late to send in your reservation. Contact Lori Weinberg at ARRL or TAPR President Andy Freeborn, NJRCCZ, at 719-598-8373 for more information.

Conference proceedings will be available at the Conference, or directly from ARRL HQ after the Conference. Cost is $12.00 plus $2.50 for shipping and handling. Papers contained in this year's edition are:

- A Packet Broadcast Protocol, by J. Gordon Beattie, Jr., N2DSY
- License-Free Spread Spectrum Packet Radio, by Albert G. Brosious, N3FCT
- The Implications of High-Speed RF Networking, by Mike Chepponis, K3MC, Glenn Elmore, N6GN, Bdale Garbee, N3EUA, Phil Karn, K9Q, and Kevin Rowett, N6RCE
- Local Distribution in the Amateur Radio Environment, by F. Davoli, A. Giordano, H1TD, and S. Zappatore, IW1PTR
- Implementation of a 1 Mbps Packet Data Link, by Glenn Elmore, N6GN and Kevin Rowett, N6RCE
- A Personal Packet Radio Mailbox Using Roserver, by Andrew Funk, KB7UV
- Design of a Next-Generation Packet Network, by Bdale Garbee, N3EUA
RADIOSERVER - A Package for TNC Access to a LAN in a UNIX System, by A. Giordano, IITD and S. Zappatore, IW1PTR

A Study of High Speed Packet Radio, by Roy E. Gould, N5RG

Prioritized Acknowledgement (PRIACK) Protocol, by Eric Gustafson, N7CL

Routing, Oh Where is My International Routing, by William C. Hast, TI3DJT

KA9Q Internet Protocol Package on the Apple Macintosh, by Dewayne Hendricks, WA8DZP and Doug Thom, N6OYU

Protocol Level 8 or What About the User?, by Lyle Johnson, WA7GXD

Thoughts on an Adaptive Link Level Protocol, by Lyle Johnson, WA7GXD

Tucson Amateur Packet Radio packetRADIO Project, by Greg Jones, WD5IVD

Amateur TCP/IP in 1989, by Phil Karn, KA9Q

OSI Services on TCP/IP Networks, by Anders Klemets, SMØRGV and Stephen Pink, KFIY

ATS-3 Packet Experiments: The Potential Impact of Packet Radio upon Pacific Basin Communications, by Gerald A. Knezek, KB5EWV and Greg Jones, WD5IVD

ARES/Data UPDATE: A Packet Radio Database for Emergency Communications with Conference Bridge, by W.E. Moerner, WN6I, Sharon Moerner, N6MWD, and David Palmer, N6KL

ROSE X.25 Network Growth, by Thomas A. Moulton, W2VY

The ROSE X.25 Packet Switch, by Thomas A. Moulton, W2VY

Using the ROSE X.25 Packet Network, by Thomas A. Moulton, W2VY

AMTEX - NAVTEX-Like Dissemination Procedures for Amateur Radio, by Paul Newland, AD7I

A Multi-Channel IBM PC Packet Interface, by Henk Peek, PA9HZP

Design and Implementation of an AppleTalk Local Area Network Bridge, by R. Ramsey and W. Kinsner, VE4WK

DAMA - A New Method of Handling Packets?, by Detlef J. Schmidt, DK4EG

Application Software for Packet Radio, by Robert Taylor, KA6NAN and Dewayne Hendricks, WA8DZP

Callsign Server for the KA9Q Internet Protocol Package, by Douglas Thom, N6OYU and Dewayne Hendricks, WA8DZP

A Brief Report on the Implementation of ROSE Networking, by Barry E. White, VK2AAB

MICROSAT THERMAL TESTING

All four of the AMSAT MICROsats were received at the Martin-Marietta Space Simulation Laboratory (SSL) building where they underwent the very important thermal vacuum chamber test. This test creates a space-like environment. Each Microsat (PACSAT, LUSAT, DOVE and WEBERSAT) was carefully mounted onto a special fixture designed to slide into the test chamber, after which the entire fixture was rolled into the 5-by 10-foot chamber. Inside the chamber, Bob McGwier, N4HY, was "inserted" (very carefully, holding his body rigid so as not to touch any part of the Microsats) into the test chamber to complete the task of connecting the RF, power and data cables to a feedthrough connector, which enabled the AMSAT Team to test the equipment without losing chamber pressure. After cabling, the chamber was checked for leaks; then the door was closed and sealed.

The first part of the test was to wait for the chamber to be evacuated to the same pressure that a spacecraft would feel in space. Once chamber pressure was reduced to 10^-6 torr, the Martin-Marietta technicians proceeded to raise the chamber temperature to +45 degrees C. At this temperature, each Microsat underwent a complete 12-hour functional checkout. This "hot-dwell" period allowed for outgassing to collect on the cold plate. Outgassing is a phenomena similar to what you'd see when a soda can is first opened. In a vacuum, most electrical components will experience outgassing of material and that material is collected on a metal plate (the cold plate) to prevent residue from adhering to the spacecraft. After thermal vacuum testing, the cold plate is chemically analyzed to determine where the residue originated. After 48 hours of thermal vacuum testing, all Microsats were functioning perfectly.

The Microsats continued through an 18-hour cold-dwell where the temperature is brought from -15 to -25 degrees C. Some problem did occur during testing (reluctant receiver channel and sticky CPU resets) and were corrected after removal from the thermal vacuum testing chamber. The Microsats were returned to Boulder for inspection and to be prepared for vibration tests which took place earlier this week. From there, they will return to Boulder for their September 25 trip to Kourou, French Guiana where the Microsats are scheduled for launch on November 10.
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

Gateway
Stan Horzepa, WAILOU
75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to: WAILOU @ W1AW.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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Nonmember $9.00
In the US, Canada and Mexico by First Class mail
ARRL Member $11.00
Nonmember $14.00
Elsewhere by Airmail
ARRL Member $14.00
Nonmember $17.00

Prices are subject to change without notice. Remittance must be in US funds, and checks must be drawn on a bank in the US.
ROSE SYMPOSIUM SCHEDULED FOR VETERANS' DAY

The Radio Amateur Telecommunications Society (RATS) and the New Jersey Institute of Technology Amateur Radio Club (NJITARC) are co-sponsoring the first RATS Open System Environment Symposium (ROSES-1) on November 11 from 8 AM until 6 PM at the Hazell Center on the NJIT campus in Newark. Admission and parking are free for all attending. Talk-in will be on 145.19 MHz.

ROSES-1 will be a packet-radio forum for new users, PBBS SYSOps and network gurus, which will focus on OSI-based or "open" systems. There will be technical talks and round table discussions on packet-radio operation, software and hardware developments, as well as license exams (provided by the Bergen Amateur Radio Association from 8 AM until 11 AM), equipment demonstrations, a TNC tune-up clinic (bring your radio and TNC), and network planning sessions for switches and PBBSes.

For testing information, contact Pete Adely, K2MHP, at 201-796-6622. For more information including speaker requests, contact Gordon Beattie, N2DSY, at 201-387-8896 or via electronic mail at:

n2dsy@kd6th (packet radio),
n2dsy@kd6th.nj.usa.hamradio.org.iso (iso/packet radio),
n2dsy@bou2d.att.com (internet), or
72417.652 (CompuServe EasyPlex).

PAKMAIL MAILBOX UPGRADE FOR THE PK-232 AVAILABLE

AEA has announced an 10-15-89 update for the PK-232 multimode data controller, which includes PakMail mailbox with third-party traffic. Unlike previous upgrades, this one includes firmware and hardware (a daughter board). Effective with units shipped after October 1, 1989, the be the PK-232MBX (MailBox) which includes this built-in feature.

In February 1988, AEA introduced PPERSIST and SLOTTIME, two commands that improved packet-radio performance by using random delay times to help reduce collisions. To improve throughput even further in both HF and VHF packet radio, this new release incorporates the Priority Acknowledge scheme defined by Eric Gustafson, N7CL. By giving priority to packet acknowledgments for data that has already been received by a distant station, useless retries of the return acknowledgments and possibly redundant data can be avoided.

For the SWL enthusiast, the PK232MBX will decode time-division-multiplexed (TDM) signals. TDM is a mode used in commercial applications that resembles FEC AMTOR, but with different coding. Using AEA's Signal Identification and Acquisition Mode (SIAM), the PK232MBX will identify the presence of a TDM signal as well as identifying the correct channel number and baud rate.

In addition, AEA added three more statements to its WHYNOT command and four more options to the CUSTOM command, both of which were introduced in December 1988.

Customers who purchased the PK-232 on or after September 15, 1989, will receive the update for a $5 shipping and handling fee. Other PK-232 owners, may obtain the firmware upgrade with PakMail and the daughter-board for $60 or firmware only without PakMail and TDM for $30. [Units purchased after September 15, 1989, should include the upgrade and be distinguished as model number PK232MBX (MailBox).] To order the upgrade, call AEA at 206-775-7373.

The price of the PK-232MBX will remain at the current amateur net of $349.95. In order to keep the price at this level, AEA will include an RS-232 interface cable with each unit instead of the "Y" cable. Because of the input received from current PK-232 owners, the expensive "Y" cable will now be an option with a suggested price of $40.

NEW ADDRESS FOR TEXAS PACKET RADIO SOCIETY

The Texas Packet Radio Society has a new address. If you have had a letter to TPRS returned recently, please mail it again to:

Texas Packet Radio Society, Inc
PO Box 50238
Denton, TX 76206-0238

from Greg Jones, WDSIVD

BY4WNG GETTING ON PACKET RADIO

A recent letter from BY4ARDX states that the club station at the University of Nanjing (BY4WNG) has been on RTTY and now wants to get on packet radio. They are interested in receiving written material on packet radio. If you have any to spare, why not put it to good use over there and mail it to:

Ni, BY4ARDX
Box 1827
Nanjing 210018
Peoples Republic of China
AFA'S MACRATT
AVAILABLE FOR MACINTOSH TERMINAL EMULATION

MacRATT is AFA's computer program for the Apple Macintosh computer to provide multimode operation with the AFA PK-232, PK-88 or PK-87 data controllers. All of the features of the AFA data controllers are now accessible by pointing the Macintosh mouse to a window to enter text, display the receive buffer and log transmitted text. All windows employ features unique to the Macintosh, such as scrolling and copying to the Clipboard.

Other features include:

- Window display of the status of file transfers and the link between data controllers and the computer.
- Facsimile (FAX) is an integral part of the program and FAX images can be sent to a printer without changing cables.
- MacRATT runs the PK-232 in the host mode and will run under the Macintosh's MultiFinder.
- Ten macro keys can be used to speed text entry.
- Sends RTTY, AMTOR and Morse code one character at a time.

MacRATT is compatible with the Macintosh II, SE, Plus, 512E and 512K. It is available from authorized AFA dealers for $59.95.

MacRATT was written by Steve Fine, WD8PUH, the author of Macket, which was an earlier packet-radio terminal program for the Macintosh computer. The ancestry of MacRATT is clearly Macket. MacRATT is essentially a new and improved version of Macket that adds new features and modifies old features.

One feature of Macket that I was glad to see modified in MacRATT was the received text scroll function. If you scrolled through received text using Macket and a new packet was received by your TNC, the received text window would immediately jump to the end of all of the received text to display the new packet and you would have to scroll through the text again to find the spot where you left off before the jump occurred. MacRATT allows you to scroll through received text in peace. If a packet is received while you are scrolling, it is not displayed until you want it to be displayed, that is, when you are finished scrolling.

Although MacRATT is being sold by AFA, it works well with any data controller. By simply changing some of the software's parameters, your Gateway editor has used it successfully with a variety non-AFA TNC 1 and TNC 2 vintage controllers.

PIGEON-HOLED BULLETINS

With the steady increase of messages arriving at our PBBSs, users have no way to effectively search the messages for specific items of interest without downloading the entire list and manually searching the Subject fields. This is an incredible waste of valuable air time on intensely congested networks.

Sending a bulletin (SB) to ALL is redundant. Bulletins are intended for anyone to read, so why address all types of bulletins to ALL? By utilizing the TO field to separate bulletins into a few specific categories, we can pigeon-hole 90% of all the bulletins being sent. Although each regional area may add a few more categories, let's try to keep this as simple and uniform as possible so users will get used to the categories.

Here is a proposed list:

TO: Topic

4SALE Items for sale or trade
WANTED Things wanted.
HELP Requests for information, help, questions, etc.
MODS Requests or information concerning equipment modifications
CLASS Ham (or other) license class announcements
EXAMS Ham (or other) examination announcements
CLUB Club events, meetings, announcements
HAMPST Hamfest or flea market announcements
MAP Maps
MAPKEY Keys to maps
NETWRK Announcements about the packet-radio network
LIST Lists (PBBSes, available material, frequencies, repeaters, etc)
INFO Information about anything (servers, help files)
ALL Anything not covered above.

In addition, some suggestions for topics not generally sent by users:

SAT All satellite related material
PROP Propagation reports
DX DX reports
QST ARRL/CRRRL bulletins not covered above

Specific equipment could also be addressed:

MJF MFJ products
AEA AEA products
KAM Kantronics products
PACCOM PacComm products
C64 Commodore C-64 computers
AMIGA Amiga computers
PC IBM PC, clones and compatibles computers
MAC Apple Macintosh computers

The only way this will work is if users use these categories when sending bulletins. Your local SYSOP does not have the time to edit your messages. Please specify a category and help reduce the clutter on the airwaves.

Most users cannot check in to their local PBBS every day to examine the message list. If they check in once per week, they may have 50 or more messages to sort through. The network cannot take it, users cannot take it and SYSOPs cannot take it. Let's fix this problem before it is totally out of control.

from Mark Marston, KA1NNN @ KA1NNN

DISTRIBUTION AND HIERARCHICAL ROUTING NAMES SOUGHT

Gordon Beattie, N2DSY, is collecting information for an Amateur Radio directory service. The items he is looking for are outlined below, but in short, please send him the distribution group names
and the hierarchical routing names that are used in your area.

The results will be posted in all the usual places with the intention of reducing conflicts and helping the packet-radio community evaluate what enhancements are needed to handle future growth. It will also provide a few references for folks wishing to add new names to the list.

Distribution Group Names

Please send the distribution list of names used in your area to distribute bulletins, group messages, etc. Examples of these include: "all@allbbs," "rats," "all@nynet." This includes private lists such as "ratsmbr" (rats members). In the case of distribution group names, please include the current distribution and any limitations on who may use this list when addressing a message.

Hierarchical Routing

Please send the hierarchical routing entries used in the rfc822-like domain strings found in messages. These usually include a "@" at some point in the string.

What to Send

Please send the following information with the entry:

1. Entry,
2. Region or group using the entry,
3. Responsible individual/club/net (include contact information, if known),
4. Systems supporting it (if known),
5. An example of how this is used (command lines and sample messages in and out of the system performing distribution would be helpful),
6. The format of the BID associated with the distribution name, for example, is there a special character sequence used with the messages or is the number sequential or a date, etc,
7. Message type(s) used in conjunction with the group name, hierarchical routing designator, etc (for example, "traffic," "bulletin," "private,"),
8. Any notes which would improve understanding of the above.

Send your replies to any of the following:

n2dsy@kd6th (packet radio),
n2dsy@kd6th.nj.usa.hamradio.org.iso (iso/packet radio)
n2dsy@bow2d.att.com (internet)
72417,652 (CompuServe EasyPlex)

If you have any questions or comments send them to N2DSY via any of the electronic mail addresses listed above or telephone him at 201-615-4168 (office) or 201-387-8896 (home).

HARDWARE AND FIRMWARE AVAILABLE FROM TAPR

Tucson Amateur Packet Radio (TAPR) is the source of a variety of unique and hard-to-find-anywhere-else hardware and firmware.

The following lists what is available.

Kits

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSK modem</td>
<td>$110.00</td>
</tr>
<tr>
<td>K9NG 9600-baud modem</td>
<td>$25.00</td>
</tr>
<tr>
<td>TNC 2 tuning indicator</td>
<td>$25.00</td>
</tr>
<tr>
<td>XR2211 DCD modification</td>
<td>$11.00</td>
</tr>
<tr>
<td>State Machine DCD modification</td>
<td>$17.50</td>
</tr>
<tr>
<td>PK232 modem disconnect upgrade</td>
<td>$17.50</td>
</tr>
<tr>
<td>TNC 1 upgrade to TNC 2</td>
<td>$59.00</td>
</tr>
<tr>
<td>TNC 1 upgrade memory kit</td>
<td>$20.00*</td>
</tr>
</tbody>
</table>

* When purchased with TNC 1 Upgrade to TNC 2 kit, includes 32-kbyte of RAM and TNC 2 firmware Version 1.1.6 (KISS-included) EPROM

Firmware:

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 kbytes of RAM with update documentation</td>
<td>$20.00**</td>
</tr>
<tr>
<td>TNC 2 firmware Version 1.1.6 with KISS (27C256)</td>
<td>$12.00**</td>
</tr>
<tr>
<td>TNC 2 WA8DED firmware (27C256)</td>
<td>$12.00</td>
</tr>
<tr>
<td>TNC 1 WA8DED firmware (2 x 2764)</td>
<td>$12.00</td>
</tr>
<tr>
<td>TNC 1 KISS firmware (2764)</td>
<td>$12.00</td>
</tr>
<tr>
<td>TNC 2 KISS firmware (27C256)</td>
<td>$12.00</td>
</tr>
</tbody>
</table>

** These two, with TNC 1 kit, $20.00

Send your orders to:

Tucson Amateur Packet Radio
PO Box 12925
Tucson, AZ 85732
or telephone 602-323-1710.

RSGB DATA SYMPOSIUM PROCEEDINGS AVAILABLE

The proceedings of the First (1988) and Second (1989) Radio Society of Great Britain (RSGB) Data Symposia are now available from for £10.50 and £11.00, respectively (plus shipping and handling). For more information, write to:

David Simmonds, G3JKB
RSGB
Lambda House
Cranborne Road
Potters Bar
Herts EN6 3JE
England
GATEWAY CONTRIBUTIONS

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Stan Horzepa, WA1LOU
75 Kreger Drive
Wolcott, CT 06716-2702

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PACKET RADIO SUPPORTS BAY EARTHQUAKE RELIEF EFFORT

An earthquake measuring 6.9 on the Richter scale and several after-shocks during the following days caused widespread damage in the San Francisco Bay area. ARRL Pacific Division Section Managers Bob Vallio, W6RGG, Richard Wilson, K6LRN, Glenn Thomas, W8GIV, and other ARRL officials in the affected areas reported that local emergency nets on the 2-meter and 220-MHz bands are in full swing. The nets provided on-site emergency communications via amateur repeaters to public officials and representatives of the American Red Cross. The extensive packet-radio network on 2 meters and 220 MHz in the San Francisco area was dedicated to handling the heavy volume of health and welfare traffic.

from The ARRL Letter

RUDAK REVIVAL PARTIALLY SUCCESSFUL

Last week, Peter Guentzow, DB2OS, and others made another attempt to revive RUDAK (a German acronym for "Regenerating Transponder for Digital Amateur Communication") to see if it was possible to bring it on-line after sitting idly for approximately six months. RUDAK was intended to be a packet-radio digipeater aboard OSCAR 13, but shortly after the launch, it was discovered that the RUDAK bootstrap loader would not load the necessary software. The culprit appeared to be a defective PROM chip that holds the bootstrap loader software.

However, last week some success was achieved when the bootstrap loader started loading software from the ground station. Although it was still not possible to load all of the necessary software, the mere fact that the RUDAK bootstrap loader worked at all leaves room for hope. The results of this attempt will be analyzed by DB2OS, Hanspeter Kuhlen, DK1YQ, and others and future efforts will be planned. Perhaps with a little bit of luck, RUDAK can eventually be brought into operation.

from AMSAT News Service

NORTHERN CALIFORNIA 433-MHZ PACKET-RADIO BAND PLAN PROPOSED

At the last general meeting of the Northern Amateur Relay Council of California (NARCC), a plan was proposed to allocate 433.00 to 433.50 MHz to packet radio. It was tabled because certain questions needed to be answered before approving the new subband. The proposed subband will allow Northern California packeters to move much of their linking from 2 meters and 220 MHz, which is especially critical if the 220-222 MHz subband is lost, and head in the direction of higher speed links, which are prohibited by emission and bandwidth restrictions on the lower frequencies. (Those frequencies will be used for mail forwarding, keyboard-to-keyboard conversations, DX-spotting network, TCP/IP, etc.) At the October meeting, NARCC hopes to gain final membership approval of this much-needed new band of frequencies.

by Brad Watson, W6AEO, Northern California Packet Association frequency coordinator from the NARCC newsletter

MICROSAT TESTING CONTINUES FOR JANUARY LAUNCH

Bob McGwier, N4HY, and Doug Loughmiller, KOSI, spent an entire week performing software and hardware testing of the four AMSAT MicroSats (PACSAT, LUSAT, DOVE, and WEBERSAT), which are now scheduled for launch in January. Chris Williams, WA3PSD, of Weber State College, assisted in the testing. The main thrust of the effort was to perform extensive software testing of the AX.25 protocol and the calibration of telemetry parameters. This software gathers the telemetry values and packetizes them so that they can be transmitted. The spacecraft will send telemetry either as unconnected packets or specific parameters, on request, to a connected station.

One of the most enjoyable aspects of the week's effort was the testing of the WEBERSAT CCD camera. WEBERSAT was set up on a table in the MicroSat laboratory with its camera pointed to the mountains around Boulder, Colorado. A command to take a picture was sent to WEBERSAT from across the room using VHF/UHF radios. The picture was taken, the information was stored and processed, and then it was sent from the WEBERSAT MicroSat back across the room to a laptop computer via a TAFR PSK demodulator, an MFJ TNC-2 clone, and ICOM 275/475 transceivers.

The Weber State College-developed software reprocessed the picture data and produced an excellent digitized image on an EGA screen. At this point, there was much joy and celebration expressed by the entire MicroSat test team. Chris Williams said that because of the launch delay, the software to process the pictures will be available from AMSAT-NA shortly before launch.

At this point there will be only minimal testing of the MicroSats until the launch campaign begins. Until then, only a skeleton crew will maintain satellites.

from AMSAT News Service
NOVICE NOTCH: NORTHERN OHIO

In Northern Ohio, there is quite a selection of activities for the Novice packeteer to choose from including several PBBSs on 223.70 MHz:

KA8Z in Canton
N8FIS is Fremont
W6HHP in Toledo
WA8BXN in Cleveland
WB8JUI in Bellevue

There are also a number of network nodes that are accessible on 223.70 MHz. These ports allow Novices to access over 60 nodes via the 4800-baud, 70-cm trunk network that operates throughout Ohio. The systems with 223.70-MHz ports include:

K8EJW-5 (CANT) in Canton
K8EJW-9 (CLE220) in Cleveland
KA8TEF-3 (REP2) in Republic

For the Novice who is ready for more of a challenge, there are several TCP/IP systems that allow cluster routing throughout the state via the developing TCP/IP network. TCP/IP systems that are accessible on 223.70 MHz include:

KA8Z in Canton
WA8BXN in Cleveland
WB8JUI in Bellevue
WB8LYF-4 (#RSNIP) in Risingsun

from Phil Frazier, KA8TEF @ N8FIS [44.70.16.1]

(Gateway would like to continue publicizing Novice packet-radio activity, so if you know of any, please let me know, too. - WAILOU)

KANTRONICS SHIPS SOFTWARE TRIO ON ONE DISK

Kantronics is now shipping three computer programs on one disk for the IBM PC and compatible computers and the Commodore C-64 and C-128 computers. The "PC Combo" includes Kanterm-PC, Pacterm-PC and Superfax. The "64/128 Combo" includes Kanterm-64/128. Pacterm-64 and MaxFax. Kanterm is a general purpose terminal program that is optimized for use with the Kantronics line of data controllers. Pacterm is a packet-radio terminal program that is optimized for use with the Kantronics line of TNCs. Superfax and MaxFax are facsimile (FAX) programs that are optimized for use with the Kantronics line of data controllers. Previously, each program was sold separately. The two Kantronics software combos retail for $49.95 each. For more information, contact Kantronics, 1202 E 23rd St, Lawrence, KS 66046.

NEW SOFTWARE RELEASES

AA4RE's BB, Version 2.7, a PBBS for IBM PC and compatible computers is available for downloading from CompuServe's HamNet data library 9 (DL9). COYNet Landline BBS (914-485-3393), Pleasant Valley BBS (508-688-1348), and WA6RDH's telephone BBS (916-678-1535), or it is available on disk from TAPR (PO Box 12925, Tucson, AZ 85732).

G3ZCZ's LAN-LINK, Version 1.54, a terminal program for IBM PC and compatible computers with multi-mode controllers/TNCs is available for downloading from CompuServe's HamNet data library 9 (DL9).

G8BPQ's TheNode, Version 3.51, networking software for IBM PC and compatible computers is available for downloading from CompuServe's HamNet data library 9 (DL9), and Pleasant Valley Phone BBS (508-688-1348).

R95, Version 1.2, a binary to data text conversion utility for IBM PC and compatible computers is available from Texas Packet Software (PO Box 50106, Denton, TX 76206).

WYRL Mailbox, Version 11.4, a PBBS for IBM PC and compatible computers is available for downloading from CompuServe's HamNet data library 9 (DL9). NIEDF's telephone BBS (508-949-3590), Pleasant Valley Phone BBS (508-688-1348), VE3GYQ's telephone BBS (519-660-1442) or it is available on disk from TAPR (PO Box 12925, Tucson, AZ 85732). (File name FS1104.EXE is the fast upgrade for those who already have Version 11.2, while file name MB1104.EXE is the full-blown version.)

MORE CONFERENCING NEWS

(The previous issue of Gateway included a number of reports from the ARRL 8th Computer Networking Conference that were written by Jon Bloom, KE3Z. Two additional reports from the conference follow. The first was provided to Gateway by Greg Jones, WDSYV. The second report was written by J. G. Beattie, Jr. N2DSY and was downloaded from CompuServe's HamNet.)

WDSYV's Conference Report

The 8th ARRL Computer Networking Conference took place on the weekend of October 7 in Colorado Springs, Colorado, at the US Air Force Academy. The conference was sponsored by TAPR, Academy Amateur Radio Club, USAFA Cadet Radio Club, Rocky Mountain Packet Radio Association (RMPRA), and the ARRL. The event was organized by TAPR president Andy Freeborn, N9CCZ. Most people thought the conference was the best one yet. In attendance were approximately 150 amateurs from across the country and the world including such QTHs as Canada, the Netherlands, Costa Rica, Italy, England, Australia, Sweden, and Mexico. This year's proceedings encompassed HF packet radio, networking, applications and users, high-speed packet radio, satellites, and other general packet-radio papers.

A group of conference attendees visited the Air Force Academy for a tour on Friday. The hospitality suite was well attended all day Friday at the Marriott and saw numerous packet-radio (and other discussions) break out. The actual conference was on Saturday with talks starting promptly at 9:15 AM, after an introduction by NFCCZ. Paul Newland, AD7I, took on a new role, that of high-tech sergeant-at-arms. With the use of "modern technology," Paul was able to let everyone know, in more than one way, before the trap door opened for the speakers. The system worked very well and let everyone presenting have their fair share of time.

Conference Presentations

A discussion of the ARRL HF design project was presented by Paul Rinaldo, W4RI.
"HF Diversity" by Steve Hall, WM6P, described using multiple receivers to improve reception of HF packets.

"AMTEX, NAVTEX-like Dissemination Procedures for Amateur Radio" by Paul Newland, AD7L, described how AMTOR could be used to provide better dissemination of bulletins in the amateur community by using a simple coding scheme.

An update on ROSE X.25 Switch activity and a description of how it works by Thomas Moulton, W1VY.

"A Packet Broadcast Protocol" by Gordon Beattie, N2DSY, presented a broadcast protocol for use in packet radio.

"Routing, Oh Where is My International Routing" by Chuck Hast, TI3DJT, presented a description of the current packet-radio network in Central America and some of the problems encountered to date in its construction.

"Amateur TCP/IP in 1989" by Phil Karn, KA9Q, discussed the current status of the KA9Q Internet Protocol Package and other related projects.

"Callsign Server for the KA9Q Internet Protocol Package on the Apple Macintosh" by Doug Tom, N6OYU, and Dewayne Hendricks, WA8DZP, discussed a TCP/IP call sign server, its implementation, and impact.

"Design of a Next-Generation Packet Network" by Bdale Garbee, N3EU, looked at technologies that have potential for impacting future packet-radio networks. A preliminary proposal was made for an example of this network configuration to be installed in the Rocky Mountain region.

"Application Software for Packet Radio" by Robert Taylor, KA6NAN, and Dewayne Hendricks, WA8DZP, discussed the possibilities of applications for amateur packet radio. A packet-radio chess program for the Apple Macintosh computer was used as an example.

"Protocol Level Eight -or- What About the Users?" by Lyle Johnson, WA7GXD, asked if packet radio will be useful to communicators or will it remain in the domain of the "techies?" Lyle discussed future implementations of packet radio for the normal user.

"Thoughts on Adaptive Link Level Protocol" by Lyle Johnson, WA7GXD, presented some new packet-radio issues.

A study by Roy Goud, N5RG, concerned the possible transmission methods that could be used in high-speed packet-radio networks.

"Implementation of a 1 MBPS Packet Data Link Using 10-GHz RF" by Glenn Elmore, N6GN, and Kevin Rowett, N6RCE, presented the design and implementation of an amateur packet-radio data link operating at 1 Megabit/s.

"The Implications of High-Speed RF Networking" by Mike Chepponis, K3MC, Glenn Elmore, N6GN, Bdale Garbee, N3EU, Phil Karn, KA9Q, and Kevin Rowett, N6RCE, discussed planning and the future applications for high-speed RF networks.

"ATS-3 Packet Experiments: The Potential Impact of Packet Radio Upon Pacific Basin Communications" by Gerald Knezeck, KBJEWV, and Greg Jones, WD5JVD, reported on work being done at the University of North Texas to provide low-cost data communications via packet-radio LAN and WAN communications in the Pacific Basin.

"MicroSat Status Report" by Lyle Johnson, WA7GXD, and Jon Bloom, KE3Z, discussed the current status of the MicroSat project.


"A Multi-Channel IBM PC Packet Interface" by Henk Peek, PA9HI, discussed a universal medium-speed packet-radio interface for the IBM/PC ISA bus.

"Design and Implementation of an AppleTalk Local Area Network Bridge Using Packet Radio" by R. Ramsey and W. Kinsner, VE4WK, discussed the design and implementation of an LAN bridge based on the link layer AX.25 packet-radio protocol and the AppleTalk Personal Network on the Apple Macintosh computer.

(Printed copies of the proceedings may be obtained for $14.50 postpaid from the ARRL, 225 Main St, Newington, CT 06111.)

Digital Committee Meeting and RMPRA Packet-Radio Conference

On Sunday, the ARRL Digital Committee met and RMPRA held a packet-radio conference (for more on the committee meeting, see the previous issue of Gateway). At the RMPRA conference, Kantronics showed its new 2-meter, 9600-baud packet radio and demonstrated an alpha-test version of a dual-port data-over-radio platform. DRSI showed layouts of their implementation of the K3MC "Awesome I/O Card." PacComm was also present displaying its packet-radio product line. Texas Packet Radio Society (TPRS) answered question about TexNet and showed TexNet hardware. TAPR sold its products and Radio Amateur Telecommunications Society (RATS) members were available throughout the conference with their new software release.

N2DSY's Conference Report

The Radio Amateur Telecommunications Society (RATS) was well represented at the conference by J. Gordon Beattie, Jr, N2DSY and Tom Moulton, W2VY. Many copies of the ROSE X.25 switch software were distributed (for free) along with manuals. A network of ROSE X.25 Switches and a bulletin board was established without prior notice by folks from all over the world! Approximately 60 folks came through our hospitality room on Saturday evening to collect software for the switch and the first release of the RATS Broadcast Server/Client programme "BBC." Another score came through on Sunday. Everyone had a chance to exchange ideas and experiences while enjoying the antics and humor.

The presentations on the ROSE X.25 Switch and OSI at the formal part of the conference were from people all over the world. This is an extremely important turn of events. Folks now come to this conference to present their OSI protocol experiences without prior contact with RATS or our software. Among other surprises, we discovered that Steve Pink, KFIY, and Anders Klements, SM4RGV, have been working with the ISO DE OSI software. Further. They also have been working with another person on their staff who has written another implementation of X.25! All in all it was a splendid conference with a lot of progress for the ROSE X.25 Switch, OSI and other important technologies needed by the amateur community.
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

Gateway
Stan Horzepa, WAILOU
75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645,247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to: WAILOU@W1AW.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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Executive Vice President

Sal Prado
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JAS-1 OPERATION TERMINATED

The operation of Amateur Radio satellite JAS-1/FUJI-OSCAR 12 was terminated on November 5 because of low power generation. During the three-year operation of the satellite, its power generation has decreased with time and, at present, its average power generation is less than 3 watts.

The Japanese Amateur Radio League reported, "It is our great pleasure to realize that we were able to provide chances of satellite communication, especially the flying BBS, and, taking this opportunity, we thank all satellite enthusiasts for having contacted the bird. Now we are preparing the next bird, JAS-1b, as the successor of FO-12, which has the same mission configuration as that of FO-12 except for its orbit. Please look forward to its launch in February 1990."

ARRL RECEIVES FEMA GRANT FOR HF MODEM DEVELOPMENT

The ARRL recently received a $10,000 grant from the Federal Emergency Management Agency (FEMA) for HF packet-radio modem and protocol development over the next two years. The ARRL will use the grant to fund out-of-pocket costs (excluding labor or overhead) for volunteer participants in the development program. (FEMA has a special interest in effective communications between FEMA representatives and Amateur Radio operators at the onset of natural disasters.)

Existing packet-radio hardware and software operate effectively above 30 MHz. At HF (3 to 30 MHz), however, reception of packets is often poor because of fading and interference. The purpose of the FEMA grant is to encourage development of techniques to improve the reliability of HF packet-radio reception. The ARRL has identified several areas for research to improve reliability and reduce retransmissions: modems, protocols, diversity reception and network management techniques.

Designers or design teams wishing to participate in this program are invited to contact Lori Weinberg at ARRL headquarters. Mail a resume of each person in the team giving qualifications in the above areas of research and a brief description of the design approach (not to exceed three pages, double-spaced). Formal proposals are not sought at this time, but will be requested in the near future.

UoSAT-D PCE PLANS ANNOUNCED

The UoSAT-D PACSAT Communications Experiment (PCE) will be an open-access Amateur Radio store-and-forward system (UoSAT-D is scheduled for launch in January along with a second UoSAT and four AMSAT MicroSats). Although there will certainly be some gateway stations (since they are efficient and cost-effective), any properly equipped amateur station will be able to use the PCE.

A ground station for the PCE must have a G3RUH-compatible, 9600-bit/sec PSK modem. This modem should be connected to a Mode-J satellite station: 145.975-MHz uplink and 435.070-MHz downlink. This modem and RF equipment must be connected to a TNC. Ground station antenna and RF power requirements should be modest; final satellite receiver sensitivity and antenna pattern measurements are now under way at University of Surrey.

To access the PCE PBBS, you will need special software running on your ground station computer. The PACSAT Ground Station Software will communicate with the PCE over your AX.25 TNC using high-level protocols currently under development by Jeff Ward, G9/K8KA, and Harold Price, N6K. This system, i.e., requiring you to connect your TNC to a host program and not to a terminal emulator, will provide a powerful electronic mail service that eliminates many of the frustrations experienced by users of the existing ground-based PBBS network. (The standard PACSAT protocols will also be implemented on the AMSAT-NA Microsats, although not using 9600-bit/sec PSK modulation.)

Full details of the PACSAT protocols will be published as soon as they are available. (A Broadcast Protocol specification, for transmission of bulletins, etc., has already been published in the proceedings of DATASPAC '89.) When published, the protocol specifications will allow software authors to begin implementing the PACSAT Ground Station Software for different computers. It is also likely that a PACSAT Ground Station Software implementation for IBM-PC compatible computers will be produced by UoSAT and AMSAT-NA and made available to other amateurs.

from Jeff Ward, G9/K8KA @ GB3UP.UK.EU
via CompuServe's HamNet

TANDY COLOR COMPUTER PACKET-RADIO TERMINAL EMULATION SOFTWARE AVAILABLE

CoCoPACT/CoPACT3 are two full-featured terminal programs designed for amateur digital communications using the Tandy TRS-80 Color Computer 1, 2 or 3 and a TNC or multimode controller. The software features split-screen operation with received data displayed in the upper screen and local keyboard data displayed in the lower screen. Special handling of TNC control codes, stream/channel switches and other TNC functions are provided to simplify control of the TNC. The programs include a 40-kbyte QSO buffer and ten user-defineable macro keys. A built-in editor can be used to create and edit incoming and outgoing data off-line.

While CoCoPACT is intended for all Color Computers, CoPACT3 is intended for the Color Computer model 3 only and features 80-column display, an additional 24-kbyte transmit buffer, and a selectable 2400-baud serial-port data rate. The programs are available on disk or tape from Monty W. Haley, WJ5W, Rt. 1, Box 210-B, Evening Shade, AR 72532 for $21.95 postpaid (for both programs).
W9RLI MAILBOX VERSION 11.5 AVAILABLE

W9RLI Mailbox, Version 11.5, a PBBS for IBM PC and compatible computers is available for downloading from CompuServe's HamNet data library 9 (DL9). N1EDF's telephone BBS (508-949-3590), Pleasant Valley Phone BBS (508-688-1348), VEQGQ's telephone BBS (519-660-1442), or is available on disk from TAPR (PO Box 12925, Tucson, AZ 85732). (File name FS1105.EXE is the fast upgrade for those who already have Version 11.4, while file name MB1105.EXE is the full-blown version.)

SOUTHWEST OHIO DIGITAL SYMPOSIUM:
CALL FOR PAPERS

A preliminary call for papers for the 4th Annual Southwest Ohio Digital Symposium has been announced. The symposium will be on January 20, 1990 at the Middletown Campus of Miami University in Middletown, Ohio. At present, there is no set agenda nor time frame. Preliminary ideas, generated from feedback from last year's event include:

1. A much-expanded session (probably a concurrent separate session) on how to get started in packet radio.
2. Networking - the next steps.
3. SYSOPs' discussion group.
4. MicroSat and other topics of interest concerning satellites.
5. Alternatives to TNCs for handling node functions: GB8BPQ switch, TexNet experience, next generation, etc.
7. New PBBS software.
8. Duplex LANS, and
9. The TAPR packetRADIO.

The symposium is a cooperative effort hosted by the Engineering Technology Department of Miami University, the Middletown DIAL Twisters (Dial Radio Club), the Ohio Packet Council, and the Cincinnati Buckeye Netters.

Please send ideas to:

Hank Greecb, N8XX @ KC8TW
6580 Dry Ridge Rd
Cincinnati, OH 45252

from Hank Greecb, N8XX
via CompuServe's HamNet

US PACKET-RADIO STATISTICS

The following represents the number of PBBSs and digipeaters in the United States as of November 1, according to the statistics maintained by Doug Bennett, K4NGC. Send any changes to K4NGC @ K4NGC.

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<td>13</td>
<td>16</td>
<td>29</td>
<td>0.89%</td>
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Total 1686 1584 3271 100.00%
PACKET-RADIO OPERATIONS DURING THE SAN FRANCISCO EARTHQUAKE:
LESSONS LEARNED, SUGGESTED IMPROVEMENTS

Lew Jenkins, N6VV, is a member of the Northern California Packet Association, which is composed of an extensive packet-radio network made up of hilltop node locations and over 30 PBBSs spread from Redding in northern California to Kern County in the central part of the state.

As one of the PBBS SYSOPs for the network, Lew was involved in handling heavy amounts of health and welfare traffic generated immediately after the October earthquake in the San Francisco Bay area. After the dust had settled a bit, Lew wrote down his thoughts about the performance of the packet-radio network and lessons learned from the emergency created by the earthquake. Here is a summary of his observations and recommendations:

- Have a network backup plan in place in anticipation of emergency situations.
- Packet radio is well designed to handle high volumes of health and welfare traffic during emergencies. Tactical communication, however, is better handled by voice.
- Because of networking possibilities, packet-radio networks can respond better than any other form of amateur communications to changes in the emergency situations. Members of the Northern California Packet Association were able to completely reroute traffic throughout the entire system in less than three hours.
- There is a need for an emergency bulletin designator, supported, but used only in extreme emergencies.
- Every amateur using PBBSs should be familiar with packet-radio NTS procedures. Circumstances generated by the earthquake required as many hams as possible with packet-radio capability to be immediately involved with handling traffic.
- All NTS traffic should be ZIP code routed. A major problem was incorrectly addressed or unaddressed traffic requiring manual intervention.

Lew feels that the San Francisco earthquake was "the first great test for this new packet-radio technology" and, in general, passed the test with flying colors. As of October 21, approximately 3000 health and welfare messages were posted on the N6VV PBBS and 2200 of them had been delivered. At one point, all of the messages were carried through the network on 220.90 MHz.

from The ARRL Letter

NAVAL ACADEMY PBBS LINK IN OPERATION

For those who would like to forward packet-radio messages to midshipmen at the Naval Academy in Annapolis, the K1LNJ PBBS in Severa, Maryland, will pass the messages to the midshipmen's computer in their Bancroft Hall room.

To start the service, advise the midshipman to open a "mailbox" with CMS by calling up FISHNET using their existing ProComm software. At the ACU> prompt, enter ALT-P. Select option S (9600 and E-7-1) to change the protocol and save the changes. Return to the ACU> prompt and type C FISHNET. Once connected, type C CMS and log on as NEW. In a couple days the midshipman’s ID will be validated and thereafter, he or she can post and receive messages.

To send a packet-radio message to the midshipman, address the message as NTS to USNA @ K1LNJ. Be sure to include the midshipman’s "Username" on the CMS link (usually the first letter of the first name and the first six letters of the last name). Midshipmen should address their return messages to "BHOWERD" and include the recipient's call sign and @ PBBS. Any questions should be addressed to K1LNJ @ K1LNJ (available from the DCA node stack in the Virginia-Maryland-DC area), or for long haul (HF), via K1LNJ @ N4QQ or K1LNJ @ W3TWI.

from Bill Howard, K1LNJ

HOW TO USE A WHITE PAGES SERVER

The WA11IE.ME BBS is now a White-Pages Cache-Server. It stores (and forwards) information about stations, their home PBBSs, etc. The following commands are used by the server:

I CALL Query the local database for all information concerning a call sign. For example: I NIHAM.

I@ BBS List users at home PBBS. Trailing * may be used as a wild card. For example: I@ W9ZRC or I@ HB*

IA List all users.

IC List all users that have logged in.

IL List local users of this mailbox.

IZ ZIP List users at a ZIP code. Trailing * may be used as a wild card. For example: IZ 950*

To get information concerning a call sign, etc., you send a personal message from your home PBBS as follows:

SP REQWP @ WA11IE.ME.USA

Subject: Leave blank

Message: Your request goes here, for example, to get the "address" of WA1ABC, the stations at ZIP code 0498*, and the stations whose home PBBS is K1RQG, your request would be as follows:

I WA1ABC
IZ 0498*
I@ K1RQG
<CTRL-Z>

As with all servers, the PBBS will create a message containing the requested information and send it to you at the PBBS where your request was initiated. If you have any questions, contact WA11IE @ WA11IE.ME.USA.

from Chuck Sullivan, WA11IE

*TEMPORARY* PACKET-RADIO ADDRESS

Until further notice, your Gateway editor's packet-radio mail-forwarding address is WAILOU @ N1DCC. Also, mail to your Gateway editor may be sent via the TCP/IP packet-radio network to IP address 44.88.0.14.
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

Gateway
Stan Horzepa, WA1LOU
75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@computer.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bits/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ NIDCS or IP address 14.88.0.14.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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MICROSAT/UOSAT LAUNCH DATE PULLED IN

Arianespace officials have informed AMSAT and University of Surrey that the launch date of the MicroSats and UoSAT D and E satellites has been pulled in by ten days and is now planned for January 9. The date change is the result of the postponement of another mission, designated by Arianespace as V35A, that was planned to lift-off on December 13.

Apparently, there are technical problems with the primary payload of the V35A mission and it will not be ready for launch on schedule, so Arianespace officials decided to use this extra time to prepare for the next flight, known as the V36A mission. They feel that pulling in the MicroSat/UoSAT launch date by ten days is feasible because the MicroSats and UoSATs, along with the primary payload, SPOT-2, are ready to fly.

The launch campaign began on November 27 with the payload integration teams from AMSAT and the University of Surrey, along with their satellites, arriving in Kourou, French Guiana. By December 20, all of the payloads will be fully integrated aboard the ARIANE IV rocket and the teams will then return home on December 23. After a short Christmas break, the final AMSAT/UoSAT teams will travel back to Kourou and stay there to monitor their respective satellites until the launch.

The UoSATs have completed RF tests in the screen room at University of Surrey and have been exposed to low temperature tests in the clean room "freezer" at -20 degrees C. Marc Fouquet, designer of the CCD camera on-board UoSAT-E, has been taking "bench-mark" images for comparison with orbital images. Totally "black" images have been collected to provide data for image processing using the Transputer Data Processing Experiment - also on UoSAT-E in collaboration with the European Space Agency. Additional solar simulation tests had to be canceled due to the advance in departure date and the spacecraft are now undergoing final cleaning and assembly in the clean room.

Uplink and downlink calibrations in an RF anechoic chamber are planned providing that the chamber can be made available within the very tight schedule. Numerous visitors from several countries, as well as the UK, have recently come to the University to view the new UoSAT spacecraft.

from AMSAT News Service and
UoSAT Mission Control Centre

TERMINAL EMULATOR AVAILABLE

DIGICART>64, a cartridge version of DIGICOM>64, the TNC emulator program for the Commodore 64 and 128 computers, is now available. The cartridge features auto-booting, making it ideal for unattended operation; should there be a power interruption, the program (and parameters) will reboot automatically. The cartridge is also ideal for Commodore users without a disk drive.

A unique feature of this cartridge is the ability to rewrite and save parameters without the need for disk access. This is achieved by using a 2864 EEPROM for parameter and text storage. No battery backup is needed to maintain data storage.

Each DIGICART>64 cartridge includes a 25-page instruction book. DIGICART>64 is available as a kit for $49.95 or tested and assembled for $69.95. Add $2.50 for shipping and handling in the US (others should write for shipping charges). Note that the DIGICOM>64 modem (see QST, April 1989, page 76) is required for DIGICART>64 operation.

DIGICART>64 is available from:

Barry N. Kutner, W2UP
614-B Palmer Ln
Yardley, PA 19067

MICROSAT MODEM TEST TAPE AVAILABLE

If you are building one of the TAPR or G3RUH 1200-baud PSK modems for the soon-to-be launched MicroSats, a good way to bench-test your modem is by using a cassette tape which Jack Mathias, W9FMW, is offering. This cassette tests your modems without requiring a "live" signal. Also, you can be sure that the rest of your system is operating correctly before the launch of the MicroSats. To obtain W9FMW Test Tape For TAPR/G3RUH Modems, contact AMSAT-NA headquarters at 301-389-6062.

from AMSAT NA News Service

FULL-FEATURE
PC TERMINAL EMULATOR AVAILABLE

RTP+ is a terminal emulator program written for the application layer of a packet-radio station. The program has been a labor of love over the past four years and has evolved into a very sophisticated program. It is an enhancement of RTP, which itself was developed from FTP with the intention of simplifying its user interface, while adding several new features. RTP+ runs on all IBM PC, XT, AT or PS/2 with a TAPR-compatible TNC or multimode controller, such as the AEA PK-232, Kantronics KAM or MFJ 1278. RTP+ requires IBM DOS 2.1 or later and works with the monochrome or CGA adapter. A minimum of 256 kbyte of RAM is required. The program is not copyrighted.

RTP+ provides numerous functions and modes for operating
packet radio, CW, AMTOR and RTTY. The program is extremely versatile and fully configurable from definition files that the user creates. Functions included in this program are optionally sent connect messages, optional automatic issuance of commands to the TNC when starting and ending RTP+, optional automatic enabling of certain features when starting the program, two or three split-screen modes, a "Net Master" mode for more than two stations in a packet-radio QSO, optional connect alarm, background and foreground color selection, optional filtering of monitored BELL characters, optional receive and transmit anti-word-wrap (no words will be split across lines) and a quick save capture for both connected and unconnected packets.

The program also features an unattended personal mini-PBBS, choice of two cursor types (regular or big block for LCD screens), expanded function key capabilities, support of non-packet-radio modes (CW, AMTOR, RTTY for intelligent terminal units or multimode controllers), an optional personalized prompt on the center strip of the split-screen, configurable NTS traffic handling function and built-in traffic editor, selectable DCD detection for both TNC 1s and 2s, configurable scroll-back buffer and optional installation of new SET (TNC parameters) file from within a DEF file. Function key editing from within RTP+ is supported and all definition file commands can be edited from within the program. Other features include user-configurable tags for function keys, optional printer capture, on-line help, optional saving of scroll-back buffer to a capture file, receive and send scroll-back buffers, support for escape to DOS and return, optional communications buffer purge, performance of predefined DOS functions or commands, automatic sending of NTS traffic to a PBBS, uploading and downloading in ASCII, XPACKET, XMODEM and binary, recalling of previous sent lines, type-ahead buffering, a prompting utility to create DEF files and full dual TNC support via two COM ports. Also, optionally combined TNC commands in a file can be sent to the TNC.

To order RTP+, please specify your call sign (each disk is custom written with a call sign) and the disk type you desire (5.25-inch 360 kbyte or 3.5-inch 720 kbyte). A 39-page operating manual is included. RTP+ costs $39.95 per copy and is available from:

N4PY Software
Rt 3 Box 260
Franklinton, NC 27525

AMSAT-NA SPACE SYMPOSIUM
PRELIMINARY AGENDA AND SECOND CALL FOR PAPERS

A preliminary agenda and second call for papers has been announced for the 4th Annual Southwest Ohio Digital Symposium to be held on Saturday, January 20, at the Middletown Campus of Miami University in Middletown, Ohio. The preliminary agenda follows (at this time, there is still room for additions to the agenda). The lack of a call sign or name following a topic indicates that the speaker has not been confirmed.

- Packet radio for beginners including hands-on demonstrations (K8NH and others)

Concurrent with the above, at least one, and possibly two sessions will be held on the following topics:

- Networking - the next steps

SOUTHWEST OHIO DIGITAL SYMPOSIUM:
PRELIMINARY AGENDA AND SECOND CALL FOR PAPERS

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Kantronics will demonstrate their 9600-bit/s digital radio and other new hardware and will sponsor a packet-radio seminar on January 21 in coordination with the Symposium.

For further information contact:

Hank Greeb, N8XX @ KCS7W.OH.USA.NA
6580 Dry Ridge Rd
Cincinnati, OH 45252

from CompuServe's HamNet

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Cincinnati, OH 45252

from CompuServe's HamNet
WD4FAB, who discussed the Phase IV geostationary satellite design effort.

After lunch, Courtney Duncan, N5BF, AMSAT Vice President of Field User Projects, discussed the many exciting activities related to OSCAR-13, for example, Operations Nets, ZRO Tests and the upcoming MicroSat launch. Then Franklin Antonio, N6NKF, presented his satellite tracking program, InstantTrack 1.0. After Franklin, there was a series of papers about the exciting scientific missions in which AMSAT and OSCAR satellite users are being invited to support including the Solar Sail, Lunar Polar Orbiter and NASA's Small Expendable-Tether satellite experiments.

Following these papers came Jeff Wallach, N5ITU, Chairman of the Dallas Remote Imaging Group, who presented a paper on high resolution weather satellite image processing. Showing slides of weather satellite pictures processed on his IBM-AT computer, many of the Symposium attendees were overwhelmed by the pictures that N5ITU's computer produced. Bill Brown, WB8ELK, closed the day with his presentation on ATV experiments with balloons. Bill showed a videotape of his latest high-altitude balloon experiments in which one of his balloons reached an altitude of 133,000 feet! Attendees were awestruck at the sight of seeing the curvature of the earth at that height. Most interesting was the trip back to earth after the balloon burst with impact impending.

After an "attitude readjustment," the Symposium attendees returned to the Meredith Corporation facilities for the banquet and awards ceremonies. Over 50 awards were presented to AMSAT volunteers in recognition of their service to the AMSAT organization, the MicroSat program and the furtherance of OSCAR satellite program.

from AMSAT News Service

**AMTOR-PACKET RADIO LINKED STATIONS**

The following is a list of AMTOR packet radio linked (APlink) Amateur Radio stations as of October 29, as compiled by Craig McCarty, WA8DRZ. Mark carrier frequency or frequencies are listed.

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<th>SYSOP</th>
<th>Location</th>
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<td>9K2DZ</td>
<td>NKDZ</td>
<td>Abdul Safit, Kuwait</td>
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<td>AH6D</td>
<td>AAHD</td>
<td>Paul Aiea, Hawaii</td>
<td>14071.5 14073.5 14075.0 14077.5 (1630-0730Z)</td>
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<td>DU9BC</td>
<td>DUBC</td>
<td>Fred Davao City, Philippines</td>
<td>14072.0 (24 hours), 7023 (mornings)</td>
</tr>
<tr>
<td>FEI1JPY</td>
<td>FJPY</td>
<td>Henry Angers, France</td>
<td>14070.8 (even weeks 1300-2100Z, odd weeks 2000-0100Z)</td>
</tr>
<tr>
<td>G4SCA</td>
<td>GSCA</td>
<td>John Plymouth, England</td>
<td>7035 7036 14070 14071.5 14072.1 14072.5 14081 (1800-2200Z)</td>
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<tr>
<td>HL9TG</td>
<td>HLTG</td>
<td>Gary Camp Humphreys, Korea</td>
<td>14073.5</td>
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<tr>
<td>K2PEQ</td>
<td>KPEQ</td>
<td>Bill Fort Lauderdale, Florida</td>
<td>14079</td>
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<td>K7BUC</td>
<td>KBUC</td>
<td>Del Phoenix, Arizona</td>
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<td>KB1PJ/8</td>
<td>KBPJ</td>
<td>David Shaker Heights, Ohio</td>
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<tr>
<td>KK4CO</td>
<td>KKCO</td>
<td>Harvey Pensacola, Florida</td>
<td>14071.5</td>
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<td>KX6HE</td>
<td>KXHE</td>
<td>Tim Kwajalein, Marshall Islands</td>
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<tr>
<td>N9IA/7</td>
<td>NNIA</td>
<td>Bud Las Vegas, Nevada</td>
<td>7047.5 7072.5 10140 14068.4 14071.5 14072.5 21071.5 28075 (1300-2100Z)</td>
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<tr>
<td>ND6MM/2</td>
<td>NNND</td>
<td>Jerry aboard M/V Sea-Land</td>
<td>3625 3627 7047.5 7071 7072.5 10140 10140.5 14068.5 14072.5 (2100-1300Z)</td>
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<td>PJ2MI</td>
<td>PJMI</td>
<td>Jose Curacao, Netherlands Antilles</td>
<td>14077.8 (1000-1200 and 2200-0100Z)</td>
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<td>TG9VT</td>
<td>TGVT</td>
<td>John Guatemala City, Guatemala</td>
<td>14074 (0500-1200Z)</td>
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<tr>
<td>VE8DX</td>
<td>VIDX</td>
<td>Bob Pond Inlet, NWT, Canada</td>
<td>7073.5 7077 14071.5 14072.5 14073.5 14077 21071.5 21075.8 23071.5 28075 28080</td>
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<tr>
<td>VK2AGE</td>
<td>VAGE</td>
<td>Gordon Goonellabah, NSW, Australia</td>
<td>7045 14075 14077 21076 (0200-0700Z beamed NA, 0700-1030 Asia, 1030-1200 NA, 1200-0000 EU)</td>
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<td>VK2EHQ</td>
<td>VEHQ</td>
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<td>VK6YM</td>
<td>VKYM</td>
<td>Herve Beckenham, Australia</td>
<td>14081 (1400-2300Z beamed Europe, 2300-1000Z beamed Pacific)</td>
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<td>W2TKU</td>
<td>WTKU</td>
<td>Al Sarasota, Florida</td>
<td>14071.5</td>
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<td>WA1URA/9</td>
<td>WURA</td>
<td>Frank Grabill, Indiana</td>
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<td>WA8DRZ/6</td>
<td>WDRZ</td>
<td>Craig Redwood City, California</td>
<td>10140.5 10141.5 14068.5 14069.5 14070.5</td>
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<td>WA8GUG</td>
<td>WGUG</td>
<td>Ross Chillicothe, Ohio</td>
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<td>WB7QWG/9</td>
<td>WQWG</td>
<td>Bob Indianapolis, Indiana</td>
<td>7072.5 7075.5 14071.5 14073.5 21071.5 28075.5</td>
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<td>WB8APD</td>
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<td>Dave Willoughby, Ohio</td>
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<td>ZF1GC</td>
<td>ZFGC</td>
<td>Frank Bodden Town, Grand Cayman Island</td>
<td>14070 14070.5 14071.5</td>
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<td>ZL1ACO</td>
<td>ZACO</td>
<td>Neill Pukekohe, New Zealand</td>
<td>14072.5</td>
</tr>
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</table>

Please send any comments or changes to WA8DRZ.

**NEW AMSAT LANDLINE BBS**

The new AMSAT landline BBS is now part of the Dallas Remote Imaging Group's BBS at 214-394-7438.

from AMSAT News Service
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

Gateway
Stan Horzepa, WA1LOU
75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ N1DCS or IP address 44.88.0.14.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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The ARRL Packet-Radio Newsletter

TAPR packetRADIO STATUS

The beta test version of the TAPR packetRADIO, that was to be unveiled at the ARRL Computer Networking Conference, didn’t happen because it wasn’t ready. TAPR could have thrown it together and taken folks money, however, it was felt that the amateur community deserved better. Packeteers have put their trust in TAPR many times and TAPR felt the only responsible thing to do was to take a little more time and do it right. This was a tough decision, but TAPR believed it was the correct thing to do.

In the next 60 days, the circuit boards are going to be revised and some tweaks will be made to the design. Hopefully, the end result will be something we can all be proud of.

Offers of help have not gone unnoticed. Andy Freeborn, NJCCZ, has a map of the US on his wall and on it are all of the call signs of people who want to participate in the beta test. A dBase listing has been compiled as well. When looking at the map, data base, and the forms prospective testers have filled out, two things become clear.

1. There are a lot of talented people who want to help.

2. Not everyone will get a radio.

Since TAPR plans to produce only 100 radios for testing, over half of the requests will have to be turned down. Beta testing should not be thought of as a way to be “first on the block” with the latest gear. Rather, it is a serious part of the final review process before turning the design over to the amateur community.

The delays are frustrating but, according to TAPR, being honest and up front with the folks that have volunteered to be test sites has been the preferred way to go.

by Pete Eaton, WB9FLW
from Packet Status Register

BB VERSION 2.8 AVAILABLE

Version 2.8 of the AA4RE BB PBBS program is now available. The primary advantage of BB over other systems is its ability to handle multiple connects per port. The program uses it own multitasker; no DesqView, DoubleDos, etc. is required. On the down side, BB has been optimized for speed, but requires at least 512 kbyte (and usually 640 kbyte) of RAM to be used productively.

The following features have been added to the software:

- New port type: G8BPQ_NODE (use version 3.51 or higher of the G8BPQ program)
- Ability to execute a DOS program from WAKEUP or keyboard
- New search arguments for the K, R and EXPORT commands, which are similar to the L command
- R option LATER and REJECT support
- Support for multiple PBBS with same call sign
- White Pages support (EW command)
- GN command to change file names while running
- NO_BUSY_FWD in PARMS.BB to prevent a forward cycle if the port is busy (intended for single connection HF operation)
- $7, $8, $9 to MESSAGEs (each sounds a different tone; intended primarily for blind SYSOPS)

You can obtain BB by sending $5 US (or equivalent) to:

Frank McPherson, KB7TV
4102 E Lavender Ln
Phoenix, AZ 85044

N7IJH in Charlotte, North Carolina, is also distributing the software. Contact him via N7IJH @ N7IJH.NC.USA.NA for information on how to obtain a copy. The software can also be obtained by downloading it from the WA6RDH telephone BBS at 916-678-1535. Those with FTP Internet service or BITNET should send a note to AA4RE @ AA4RE.#NOCAL.CA.USA.NA with your TCP/IP address or BITNET address for delivery over those networks. The software should also be available from TAPR (PO Box 12925, Tucson, AZ 85732).

In addition, the following programs are available:

- BB28DOC: N4CHV’s DOC file for BB
- BBUTL12: KL7GNG’s BB utility package, which includes Log File Analyzer
- BBBS: KL7GNG’s information on N4HY’s satellite tracker server

Please correspond directly with the software authors if you have questions, comments, or problems with these files.

In addition, N2MH’s header parser has been tested and is recommended (it updates your HLOOKUP.BB file based on incoming messages). Contact N2MH directly (via N2MH @ N2MH.NY.USA.NA) for version 68.

from Roy Engehausen, AA4RE
<table>
<thead>
<tr>
<th>Country</th>
<th>Callsign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
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</tr>
<tr>
<td>Australia</td>
<td>VK2XQ</td>
</tr>
<tr>
<td>Austria</td>
<td>OE1YSS</td>
</tr>
<tr>
<td>Belgium</td>
<td>ON7LE</td>
</tr>
<tr>
<td>Canada</td>
<td>VE3GQY</td>
</tr>
<tr>
<td>Chile</td>
<td>Flavio Llanos</td>
</tr>
<tr>
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<td>Ecuador</td>
<td>HC5K</td>
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<td>Greece</td>
<td>SV1IW</td>
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<td>VS6EL</td>
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<td>Hungary</td>
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<tr>
<td>Italy</td>
<td>I2KFX</td>
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<tr>
<td>Japan</td>
<td>JG1SLY/JH3XCU</td>
</tr>
<tr>
<td>Netherlands</td>
<td>PA6GRI</td>
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<tr>
<td>New Zealand</td>
<td>PA6GRI</td>
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<tr>
<td>Norway</td>
<td>LA4JL</td>
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<td>Philippines</td>
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<tr>
<td>Sweden</td>
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<td>Switzerland</td>
<td>HB9SFD</td>
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<tr>
<td>United Kingdom</td>
<td>G3MRX/G6KVK</td>
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<tr>
<td>Venezuela</td>
<td>OA4KO/YV5</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>YU3PK</td>
</tr>
<tr>
<td>Outer Space-AMSAT</td>
<td>W3JW1</td>
</tr>
<tr>
<td>Testing</td>
<td>none</td>
</tr>
</tbody>
</table>

New features include extensive coverage of the various networking schemes (NET/ROM, KA-Node, ROSE, TCP/IP, TexNet, etc), the new packet-radio satellites, and an "Applications" chapter. Another new feature is a detailed TNC features comparison chart. The extensive glossary of terms and source listing that appeared in the first edition have been expanded even further in the new edition.

Your Gateway to Packet Radio was written by your Gateway editor, Stan Horzepa, WA1LOU. It will be available soon from your local ham radio emporium or directly from ARRL headquarters for $12 plus $2.50 for shipping.

HOW NOT TO USE A WHITE PAGES SERVER

The story "How To Use A White Pages Server" that appeared in the November 17 issue of Gateway may have misled some of our readers. A cache server* is intended for use on a local basis only, that is, information requests sent to a cache server should only be generated from users within the area served by that cache server, not from the packet-radio population in general. Information requests that can not be handled by a local cache server should be addressed to the White Pages global server, which is PBBS W9ZRX (W9ZRX.IN.USA.NA).

GATEWAY CHRISTMAS BREAK

It's that time of year again when your editor takes an extra week to get out the next issue of Gateway. Why? So, he can do his Christmas shopping? So, he can finish addressing his Christmas cards? So, he can deck the halls with boughs of holly? Besides those reasons, in order to insure that Gateway is published only 25-times-per-year, there must be a three-week lag between issues twice each year (instead of the normal two-week lag). Therefore, the next issue of the newsletter (Volume 6, Number 8) will be dated next year, specifically, January 3, 1990. Until then...

Happy Holidays from the WA1LOU family!

Laurie the XYL, Hayley the Harmonic, & Stan the Old Man.

NEW ARRL PACKET-RADIO BOOK DUE SOON

The Second Edition of the ARRL's popular packet-radio book, *Your Gateway to Packet Radio*, will be on sale real soon now. The second edition picks up where the first edition left off, adding coverage of all the packet-radio developments that have occurred since the first edition of the book was published two years ago.

Happy Holidays

from Phil Karn, KA9Q
CONNECTICUT HIGH-SPEED
PACKET-RADIO BACKBONE ON LINE

As amateurs, we have thought of the concept of 9600-baud packet radio for some time. In Connecticut, these thoughts have finally become reality with 9600-baud packet radio links now in operation. The concept was proposed to us by Mark Herson, N2MH, the EastNet Network Manager. His scheme for a multi-tier network offered relief to the crowded 220-MHz backbone frequencies of the Tri-State area (Connecticut, New Jersey and New York).

The Connecticut network was formed using the basic concept of all users access via 2-meter user nodes. The multiport systems would form three regional networks with the N1DQS site serving as Region 1, the Insurance City Repeater Club site, WA1UQC, as Region 2, and the W1HAD site as Region 3. The N1DQS system is a four-port system, while the WA1UQC and W1HAD systems are three-port systems. The three systems form a dedicated UHF backbone operating at 9600 bauds. The fourth port at N1DQS ties into the New York network, EBN (By the time of this publication, the EBN network may have its own 9600-baud system tied in at well.) WA1UQC extends into the New England network, NEDA. This provides a four-level system with no hidden transmitters on either the 220-MHz regional network frequencies or the UHF 9600-baud high-speed backbone.

The equipment used on the 9600-baud paths are 30-watt Maxon 70-cm commercial grade 2-way radios with MFJ and PacComm TNCs equipped with PacComm 9600-baud modems. TXD is set at 20, although bench tests show the ability to run TXD as low as 5 or 10. This will be fine-tuned in time. The port diode matrices are running at 19.2 kbaud at all key sites. This has drastically increased through-put into and out of the state. Users can now access PBBSs that they could never access before and PBBS forwarding is much quicker. In addition, user channel congestion due to PBBS forwarding has dramatically decreased.

from Caesar Rodina, N1DQS, CT Section Manager

Those wishing to be on the speaking agenda should advise the TAPR office as soon as possible. The Sunday session should be concluded near or shortly after noon for those planning afternoon departures.

from Packet Status Register

IP ADDRESS COORDINATOR LIST

Here's the list of regional IP address coordinators as of November 29, courtesy of Brian Kantor, WB6CYT, the global AMPRNET address coordinator. (An IP address is required in order to use the KA9Q Internet Protocol Package for amateur packet-radio TCP/IP operation. Contact your region's coordinator for an address assignment.)

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>IP ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Coordinators</td>
<td></td>
</tr>
<tr>
<td>AK</td>
<td>44.022</td>
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<tr>
<td>AL</td>
<td>44.100</td>
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<tr>
<td>AR</td>
<td>44.110</td>
</tr>
<tr>
<td>AZ</td>
<td>44.124</td>
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<tr>
<td>CA: L.A./San Fernando Valley</td>
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<td>CA: Orange County</td>
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</tr>
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<td>CA: Sacramento</td>
<td>44.002</td>
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<tr>
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<td>44.018</td>
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<tr>
<td>CA: San Diego</td>
<td>44.008</td>
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<td>CA: Santa Barbara/Ventura</td>
<td>44.006</td>
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<td>CO: northeast</td>
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<td>CO: western</td>
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<td>DC</td>
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<td>FL</td>
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<tr>
<td>GA</td>
<td>44.036</td>
</tr>
<tr>
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<td>44.014</td>
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<tr>
<td>IA</td>
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<tr>
<td>IL: northern</td>
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<tr>
<td>IN</td>
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<td>KY</td>
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<tr>
<td>MA: Boston</td>
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<td>ME</td>
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<td>NJ: southern</td>
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<tr>
<td>NM</td>
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<td>OH</td>
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<tr>
<td>OK</td>
<td>44.078</td>
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<tr>
<td>OR</td>
<td>44.026</td>
</tr>
<tr>
<td>OR: Portland</td>
<td>44.116</td>
</tr>
<tr>
<td>PA: eastern</td>
<td>44.080</td>
</tr>
</tbody>
</table>

TAPR ANNUAL MEMBERSHIP MEETING SCHEDULED

As has been the case since the formation of the organization, the 1990 TAPR Annual Membership Meeting will again be held in Tucson, Arizona, February 24-25 at the same location as last year, ie, The Inn At The Airport, 7060 South Tucson Boulevard, which is a short distance from the airport terminal.

The Inn At The Airport again offers special rates of $49 for either one or two persons in a room. Breakfast is included in the rate and there is a late afternoon cocktail hour free to those staying at the Inn. Reservations may be made by calling 1-800-772-3847 (in Arizona, call 602-746-0271).

On Friday night, there will be the customary social session with lots of getting (re)acquainted; pizzas as usual. Following the pizza session, the would-be Indy 500 contestants will burn rubber at the Malibu Grand Prix. Since last year's western-style meal in a dining room adjacent to the conference room was so popular, it will be scheduled again this year.

Expect to see many of the manufacturers of packet-radio equipment present with displays and demonstrations. Some have already contacted TAPR for arrangements. All of the new TAPR kits will be shown and discussed.
GATEWAY CONTRIBUTIONS

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AMATEUR SATELLITE LAUNCH IMMINENT

All seven payloads: four MicroSats, two UoSATs and the primary SPOT-2 payload have been integrated and encapsulated in their payload structure in preparation for launch this month. The SPOT-2 has also been fully fueled and all are awaiting mating with the Ariane vehicle which will occur in a few days.

The MicroSat batteries are being trickle-charged, 10 hours on and 14 hours off per day, by Dave Cowdin, WD9IHU, who will be in Kourou through launch day. This is done so that the on-board computers will remain powered up to retain their software loads in preparation for early flight operations.

Although separation from the launcher physically connects power to the MicroSat transmitters, they will not actually be turned on until a few hours after launch by either NK6K operating W6TRW on the US West Coast or N4HY on the East Coast.

Rudimentary telemetry software for IBM PC and compatibles is being prepared at this time and will be available soon. Distribution will be first to command stations and Command Station Development Program members followed by availability from AMSAT Headquarters and various electronic sources. If you do not have your software in place on launch day, simply capture files of received data for later processing.

Monitor the following frequencies early in the mission:

- **LUSAT**: 437.150 PSK straight PSK transmitter
- **LUSAT-CW**: 437.125 CW modified character set
- **WEBERSAT**: 437.075 PSK raised-cosine transmitter
- **PACSAT**: 437.025 PSK raised-cosine transmitter
- **DOVE**: 145.825 FM packet radio

Monitoring the PSK signals will require an SSB receiver and a TNC 2 modified with a 1200-baud PSK demodulator. FM packet radio from DOVE may be monitored with an unmodified TNC and FM receiver. The LUSAT CW beacon transmits telemetry values in Morse code with modified numeric characters to save CW transmitter power. In all cases, more information will be published as it becomes available from the spacecraft development team. Copy CW signals as heard and capture packet-radio telemetry into computer disk files for later processing.

Additional information including other downlink frequencies and the uplink frequencies will be released as "opening day" for each of the satellites nears.

from AMSAT News Service

AUTOMATIC CONTROL OF HF DATA COMMUNICATIONS PROPOSED

On December 12, ARRL counsel Chris Imlay, N3AKD, filed a petition for rule making with the FCC seeking the adoption of rules to permit limited HF RTTY and data communication under automatic control. The 24-page petition draws on the experience gained during the past 2-1/2 years under the STA granted to the ARRL in mid-1987 permitting a limited number of packet-radio stations (known as "SKIPNET") to operate under automatic control on specific HF frequencies forming an organized "long haul" message forwarding network. The League's conclusion, based on this experience, is that the desirability of automatic operation on the HF bands has been firmly established and, in fact, is now an integral part of the normal Amateur Radio activity in all ITU Regions.

The ARRL's proposal seeks inclusion of automatically controlled AMTOR and Baudot as well as data modes. In the petition, ARRL says, "the feasibility of automatically controlled operation on AMTOR has been demonstrated by US amateurs operating under special temporary authority. ... AMTOR is more robust than is packet radio and is used to bridge difficult radio paths. ...Thus, its operations under automatic control is not only feasible, but necessary for the development and efficient operation of amateur networks. ...manually controlled Baudot RTTY 'mailboxes' (or MSOs) have been active in the Amateur Radio Service since the early 1980s. ...the software controlling the mailboxes has provisions which allow the interrogating station to ask for repeats. Manual control of these mailboxes...is an unnecessary burden on the mailbox system operators. ...The technology and operational experience using each of these modes has matured to the point that this is now possible. ...the benefits of automatic operation are shared by amateur operators worldwide and are instantly available to provide public service during disasters."

The petition seeks designation of the following band segments as being available (not exclusively) for automatic control of RTTY and data transmissions: 3.605 to 3.615 MHz, 7.035 to 7.045 MHz, 10.140 to 10.150 MHz, 14.090 to 14.100 MHz, 18.100 to 18.110 MHz, 21.090 to 21.100 MHz, 24.920 to 24.930 MHz, 28.100 to 28.120 MHz.

In a separate letter to SKIPNET members, ARRL Executive Vice President Dave Sumner, K1ZZ, explained why these particular frequencies are suggested in ARRL's petition. Dave said that the ranges chosen in most bands are probably self-evident except for those in the 20- and 40-meter bands.
"The specific frequencies used by SKIPNET stations have shown it's possible to shoehorn in with other US users. But, we have received complaints from societies in other countries about HF packet-radio frequencies, particularly in the 20- and 40-meter bands.

"On 20 meters, nearly every other country operates phone in the 14.100-14.110 MHz range, and packet-radio operations in the lower part of that range have been a continual cause of concern to them. This has been the case in all ITU/ARRL Regions including Region II -- the Americas. The fact that some of their own packet-radio operators use frequencies above 14.100 has not convinced the societies in other countries that this is a good place for packet radio. The worldwide consensus (with some reluctance on our part) is that packet radio should operate below 14.100. Of course, that puts pressure on the Baudot RTTYers and AMTOR RTTYers just below them in frequency and, ultimately, on the CW operations.

"On 40 meters, most countries have a narrower band -- only 7.0 to 7.1 MHz -- into which they must squeeze CW, RTTY, packet radio, phone and image communications. Around 7.040, or even as low as 7.030, is where their phone band starts. So, you can understand why there might be contention over packet radio and RTTY around 7.090.

"The frequency segments for each band were chosen after careful review of domestic and international implications. While we knew from the beginning that there was no such thing as a "perfect fit," we had to try for a "best fit" solution. Please bear in mind that we now have a viable packet-radio network that is worldwide in scope. As such, we need to use frequencies that are compatible with the rest of the world. Even with the frequency segments chosen, there may still be the need for future adjustments, both by us and in other countries, to finally arrive at common segments for automatic operation.

"We anticipate that individuals may wish to suggest some changes in the frequency segments proposed by the League. We believe such input to be helpful in cases where commenters take the time to consider the domestic and international implications of their proposals."

The FCC has not yet assigned an RM number to this petition.

from The ARRL Letter

PACKET RADIO IN SAREX 1990 PLANS

The Shuttle Amateur Radio Experiment (SAREX) will have a big year in 1990. So much so, it has been dubbed "SAREX-90."

STS-35 Space Shuttle Columbia is scheduled for a 10-day mission, to be launched on the evening of April 26, 1990. Dr Ron Parise, WA4SIR, a Payload Specialist, has been cleared by NASA to operate voice and packet radio during his flight.

STS-37 Space Shuttle Atlantis is scheduled for a five-day mission to be launched June 4, 1990. Marine Corps Lt Col Ken Cameron, KB5Awp, the Pilot, has been authorized to operate voice, packet radio, slow-scan television and ATV.

Both flights will use the amateur 2-meter band. The equipment is now undergoing final testing at the Johnson Space Center in Houston. Packet-radio operations will be continuous for periods of about 12 hours daily. Voice and television operations will be dependent on the astronaut's work schedules; but early flight plans indicate that they should have an hour or more available daily.

The orbital track on both missions will be at an inclination of approximately 28.5 degrees. This southerly orbit will put most of the United States out of range during the times when the astronauts are available, so AMSAT plans to establish ground station networks over strategic locations to relay communications. Stations in Australia, South America, Mexico, and Africa are now being contacted by AMSAT. Japan also is under consideration. Each general area will be coordinated by a control station, which will be in direct contact with a key station, W5RRR, at the Johnson Space Center in Houston, Texas. They will use amateur satellites, short wave links and commercial facilities for the international hookup.

Communications will be broadcast by the key station and repeated to WA3NAN, at Goddard Space Flight Center, Washington, DC and to W6VIO, at the Jet Propulsion Lab in Pasadena, California. Broadcasts from these stations, and W1AW, will be heard on most amateur bands. Several VHF and UHF repeater groups plan to pick up and transmit the material. They will carry NASA Mission Commentary, frequent bulletins to advise listeners of astronaut planned transmissions and repetition of all amateur two-way voice and slow-scan TV transmissions with the spacecraft. Mission planning information also will be fed by computer from the Johnson Space Center to the coordinating stations to insure the accuracy of their bulletins of advice on when and where to tune in the spacecraft. W1AW will be used as a media showcase, as will W5RRR.

In addition, a Teleconference Net is planned to feed most amateur repeater stations in the United States. These stations will permit easy access to schools. With the help of Amateur Radio club members and handheld equipment, students will be invited to share in the flights. They will even be able to talk directly to the astronauts at some locations!

This project is co-sponsored by the ARRL and AMSAT. ARRL is lead organization for information, education and support. AMSAT is lead for technical operations. The Johnson Space Center Amateur Radio Club is in charge of in-flight equipment and flight planning. The Motorola Radio Club in Illinois has provided specially built transceivers and antenna.

from The ARRL Letter

PACKET RADIO STARS IN TREK FLICK

Several months ago, Harold Price, NK6K, challenged me to demodulate what he thought might be HF packets in the motion picture Star Trek IV. During the scene where Scotty is valiantly trying to beam both Chekov and Uhura back from the USS Enterprise, Scotty is having a hard time hearing them. One of the sources of interference appeared to Harold to be HF packet radio.

Always being one to rise to a challenge, I took on the job of doing some fancy Digital Signal Processing footwork. Almost from the first, I was certain that it must be an HF packet because my very first demodulation attempt clearly revealed flags before the start of a frame and end of frame. I knew it was HDLC of some variety.

Several things impeded the effort including Scotty's voice on top of the packets and some 20-meter SSB nearly on top of the signal. All of this had to be filtered out. I spent an hour of time on the
Cray-2 at work and used the fanciest FSK demodulator I could write and I finally had the noisy baseband signal plotted on paper in front of me. I did my best to get an integral number of samples per baud as the signal was very noisy and, though the bits could be made out by eye, I could tell that it was going to take another hour of Cray-2 time to get the clock recovered and to make good bit decisions. In a couple of places, HDLC showed me what were clearly bit errors and these could be done by eye as well.

After the filtering and building a demodulator for the badly mistuned signal (it was almost 900 Hz below 'normal'), I took the bits to Phil Karn, K9Q, and he decoded the NRZI data and proved beyond a shadow of a doubt that it was indeed an HF Amateur Radio packet. It was WA8ZCN-0 sending an RR for NR-3 to N6AEZ on 20 meters. I got Bill Harrigill, WA8ZCN, on the phone and he agreed that it was probably him. Thanks Harold for the challenge and Phil for the help.

from Bob McGwier, N4HY
via CompuServe's HamNet

HIERARCHICAL ADDRESSING TIPS

More and more PBBSs are now supporting "H" Hierarchical addresses of the form K9DOG @ W31WI.MD.USA. You can tell which PBBSs accept such addresses when you connect to them by looking at the SID (System ID). This is the field like [MBL-5.13-HS] or [RLI-11.6-CHS] where the H indicates that the PBBS accepts the expanded addresses.

Now for some "rules":

1. In the portion to the right of the "@" you still must supply a valid PBBS call sign if you use H addressing. Do not use H addressing for NTS messages (eg, ST 94321 @ NTSCA ) or for bulletins (eg, SB ALL @ MDCPBBS $). You don't have to use H addressing for well-known PBBSs.

2. The fields to the right of the @ which are separated by periods are intended to be real, physical locations. The convention that is being followed is to use the two-letter state/province postal abbreviation. Examples in the US and Canada include MD for Maryland, PQ for Quebec, MI for Michigan, WA for Washington state and DC for Washington, DC.

Similar examples in foreign countries include MI for the Milano district of Italy and WA for the state of Western Australia.

3. This is followed by a three-letter country abbreviation following ISO standards (the same letter codes used during the Olympics). Examples are:

<table>
<thead>
<tr>
<th>Argentina</th>
<th>ARG</th>
<th>Italy</th>
<th>ITA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>AUS</td>
<td>Japan</td>
<td>JPN</td>
</tr>
<tr>
<td>Austria</td>
<td>AUT</td>
<td>South Africa</td>
<td>ZAF</td>
</tr>
<tr>
<td>Brazil</td>
<td>BRA</td>
<td>Spain</td>
<td>ESP</td>
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<tr>
<td>Canada</td>
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<td>Sweden</td>
<td>SWE</td>
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<tr>
<td>Chile</td>
<td>CHL</td>
<td>Switzerland</td>
<td>CHE</td>
</tr>
<tr>
<td>West Germany</td>
<td>DEU</td>
<td>England</td>
<td>GBR</td>
</tr>
<tr>
<td>Greece</td>
<td>GRC</td>
<td>United States</td>
<td>USA</td>
</tr>
<tr>
<td>Indonesia</td>
<td>IDN</td>
<td>USSR</td>
<td>SUN</td>
</tr>
<tr>
<td>Israel</td>
<td>ISR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. An optional continent code, like EU for Europe, NA for North America, AS for Asia, AU for Australia, may be added.

5. Addresses are assembled from left to right, smallest area to largest. Thus, my full address would be W31W/I@W31W/1.MD.USA.NA but for forwarding within this continent, W31W/I@W31W/1.MD or W31W/I.MD.USA would be adequate. From the examples given above, you must be careful of mail leaving the country since MI could be either Michigan or Milano. Thus I would need to address a message to my friend Luca in Milano as IW2ECLI@I2KBD.MI.ITA or IW2ECLI@I2KBD.MI.ITA.EU to avoid the message going to Michigan.

6. In some cases, you will see attempts to facilitate local distribution with an address like W6XYZ@N6VV.#NOCAL.CA.USA, where the #NOCAL may mean something in California, but is just passed through by PBBSs forwarding the mail out west. Such supplementary addresses are always preceded by a #. Don't try to be creative inventing new ones. A bad example is one user who invented the return address xxxxx@N4QQ.MDCPBBS.MD.USA.Z:21211 -- both the MDCPBBS and Z:21211 fields are hogs.

7. Don't use these addresses to try to force routing. A recent message sent to Washington state with the address xxxxx@WSMTM.W31WI played ping-pong for three days between the W31WI and WB7DCH HF mail gateways.

8. The extended H address applies to the PBBS, not to the individual user. Thus, if K9DOG uses W31WI, then his address is K9DOG@W31WI.MD.USA, not K9DOG.MD.USA. The address for a Virginia user of WA3ZNW is N4PQR@WA3ZNW.MD.USA and not N4PQR@WA3ZNW.VA.USA since WA3ZNW is located in MD.

9. Remember you need to supply a correct address for mail. You should not worry about the route the mail takes. Don't try to force your mail to follow a particular path.

10. It is your responsibility to supply a good, clean, correct address and the packet-radio network will do its best to move the mail to its destination. Be careful about typographical errors. Here are some examples of what has happened: N9AN is not the same as NOAN (with the letter o). W1XYZ is not WIXYZ (with the letter I) nor is it WIXYZ (with a lower case L).

from Tom Clark, W31W1
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

Gateway
Stan Horzepa, WA1LOU
75 Kreger Drive
Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ N1DCS or IP address 44.88.0.14.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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IIAM SATELLITES' LAUNCH DELAYED UNTIL JANUARY 21

On January 8, ArianeSpace officials announced that the V35 launch of the Amateur Radio Microsat and UoSAT satellites will be delayed further due to problems with the non-Amateur Radio SPOT-2 satellite, which is the primary payload of the mission. The problem with SPOT-2 was due to a magnetic tape recorder failure. The launch is now scheduled for January 21 at 01:35 UTC.

from Bob McGwire, N4HY and Eric Rosenberg, WA6YBT via CompuServe's HamNet

SKIPNET STA EXTENDED

The FCC has granted a one-year extension of the STA (special temporary authority) for automated packet-radio operations on HF for SKIPNET participants. This January 4 action is in direct response to an ARRL request.

ARRL AWARDS FIRST GRANT FOR HF PACKET-RADIO RESEARCH

The ARRL made its first technology grant of more than $1000 to a team of investigators headed by Stephen Hall, WM6P, for research in diversity reception of HF packet-radio signals. Co-investigators in the team are Andy Demartini, KC2FF, Wally Lindstruth, WA6JPR, Bill Lake, WB6RIJ, Herb Duncan, WE7L, and Peter LaCount, W8UXD.

The objectives of this work are to investigate the benefits of diversity reception for HF packet radio, design practical diversity antenna systems, modern characteristics and receiver design for diversity. Funds provided under this grant are for purchase of equipment, electronic parts and other out-of-pocket expenses in connection with this research. The team members donate their volunteer labor and much of their own equipment in carrying out this work.

NEW VERSION OF ARES/DATA AVAILABLE

Version 1.1 of ARES/Data is now available. The new version of this multiconnect, multiport, generic data base program for the IBM PC and compatible computers provides the following three new features:

A STATUS command provides a brief status of the system, i.e., the current LABELS and WIDTHS settings and the current data base size.

An automatic Origin Indicator at the beginning of the MESSAGE field indicates which station last updated each record. The station's call sign or the word "SYSOP" will appear here, so in case of data entry errors or other questions, everyone will know who made each entry.

A WIDTHS command allows you to more neatly format output data on the screen. It does not change the data in any way, but provides a way for the column output to "look right." If the value for any field is shorter than the defined WIDTH for that field, when that record is displayed, spaces will be used to keep the fields aligned. If a given value is longer than the specified WIDTH, then all of the value is displayed.

The program may be downloaded from CompuServe's HamNet or may be obtained by sending a blank disk (5-1/4-inch 360-kbyte or 3-1/2-inch 720-kbyte) and return postage to:

    W.E. Moerner, WN6I
    1003 Belder Dr
    San Jose, CA 95120-3302

ARES/Data may be distributed freely as long as distribution is on a nonprofit basis.

from W. E. Moerner, WN6I @ KB6OWT

PACKET RADIO MANUAL IN BRAILLE

Northern Nevada Braille Transcribers, a volunteer, nonprofit, tax-exempt group, now has the MFJ-1720 TNC 2 Packet Radio Owner's Manual available in Braille. It is contained in six volumes of various lengths. It is also available on an Apple computer floppy disk. This Braille manuscript is available without charge to anyone who can use it, however, contributions in any amount are gratefully accepted. Interested parties can write for additional information to Northern Nevada Braille Transcribers, 1015 Oxford Ave, Sparks, NV 89431.

from The ARRL Letter

RESTRUCTURING OF THE PACKET BULLETIN BOARD SYSTEM PROPOSED

Much grumbling is heard these days about bulletins in the PBBS network. The complaints include such things as there are just too many bulletins for PBBS users to sift through, many of them have inappropriate distribution (items of purely local or regional interest being propagated around the world), you often can't tell what the subject matter is without reading them, important local
items are missed in the hodgepodge of bulletins from afar and so on. To a certain extent, these are problems of user education. PBBS users need to be informed more emphatically not to send "for sale" items to @ALLBBS, to use more informative Subject lines, etc. The real problem, however, is that PBBS SYSTOPS lack the bulletin management tools which would allow them to bring some order to this chaos.

Anyone who uses landline BBSs, information utilities such as CompuServe, or computer networks such as USENET, already has an appreciation for one major shortcoming of PBBSs. Unlike those systems, the packet-radio systems have no means of subdividing the bulletins (which usually go by different names on other systems) into different categories or special interest areas. Therefore, users have to wade through everything from soup to nuts (especially the latter!) to find the few items of interest to them. This wastes time and precious channel bandwidth. One partial solution to the problem is to use the "To: field of bulletins to categorize them; then astute PBBS users can use commands like "L > XXXX" to find bulletins related to the area designated by "XXXX." KAINNN has proposed a list of categories (as published in Gateway, Volume 6, Number 2, and also distributed on the PBBS circuit) and some categories are already in use in some areas. This is by no means a complete solution, but it is a good first step and one which PBBS SYSTOPS should strongly support.

In considering what other changes might be made to the packet-radio bulletin distribution system, it is useful to examine how those other systems mentioned above handle similar tasks. I would like to focus on USENET because I believe it offers the most useful model from which we can learn, but there are certainly others worth examining, such as the Fidonet BBS network.

Although USENET is not a BBS, it has some notable similarities to the PBBS network. It has been described as "a kind of grass roots network based on controlled anarchy." Sound familiar? The network consists of more than 5000 computer sites, ranging from huge mainframes to lowly PCs. What they have in common is the UNIX operating system (or at least the ability to communicate with UNIX systems). In USENET, "bulletins" are articles posted by users of these systems and the articles collectively make up the USENET "news." The news is subdivided into approximately 300 different "newsgroups" and articles are propagated amongst the participating systems by a flood routing scheme very similar to that used for packet-radio bulletins. Of course, the medium of propagation is different, typically being telephone dial-up or leased lines, and the volume of news is considerably greater.

A USENET user accesses the news by logging into his host system and running a "newsreader" program. Most systems have several such programs available, each with a different user interface. They all make use of a configuration file in the user's home directory, which lists all of the newsgroups. For each newsgroup, this file indicates whether the user has "subscribed" to it (i.e., whether the newsreader will show him articles from that newsgroup) and which article number he has read. While reading an article, the user has options such as sending a reply to a file or to a printer, posting a follow-up article or sending private e-mail to the author.

Articles can also be posted without running the newsreader by using a different program, usually called "postnews." This is typically used when the article is not a follow-up to a previous article. The program first asks for a subject, then some key words that can be used for searching and then the name of the newsgroup in which to post it. More than one newsgroup can be selected ("cross-posting") in instances where the article's content spans several areas of interest. If the user is unsure of what newsgroups are available, the program can provide him with a list. The program then prompts for a distribution area for the article. There are usually about six choices (e.g., local site only, metropolitan area, state or province, country, continent, worldwide); each newsgroup will have a pre-defined default distribution area which can be accepted by simply hitting Enter. Then the user is transferred to an editor to create the body of the article. Doing a follow-up article is easier because all of the preliminary details (newsgroup, key words, subject, distribution) are picked up from the article to which the user is replying.

One other interesting aspect of newsgroups is that some of them are moderated. This means that users are not allowed to post articles directly from their site into that group; instead, they must be mailed to a moderator, who posts them only after determining that the contents are actually a useful contribution to the discussion. This sounds like censorship, and moderated groups are in the minority on USENET, but a good moderator can really keep the noise level down and the quality level up.

Since there are a great number of USENET newsgroups running the gamut from highly technical and specialized to completely frivolous, a hierarchical naming system has been developed to make them easier to handle. A newsgroup name consists of two to four sections, separated by periods, proceeding left to right from the general to the specific. At the top of hierarchy are some broad topic areas such as "rec." (recreation/arts/leisure), "sci." (science and technology), and "comp." (computers). The newsgroup that deals with general topics of interest to hams is rec.ham-radio, but there is also a more specific newsgroup devoted to packet radio, known as rec.ham-radio.packet. The group for discussing IBM PC compatibles is comp.sys.ibm-pc, and so on. A few of the newsgroup names indicate geographical or institutional areas rather than topic areas. Since many of the USENET sites do not want to carry all of the newsgroups, the hierarchical naming system makes it much easier to specify which groups will be accepted by a particular site.

An interesting aspect of the anarchic nature of USENET is the way in which new newsgroups are created. There is no central authority to organize such things, so it is up to the initiative of individual users to start the process. Proposals for new newsgroups are discussed, often heatedly, in a particular newsgroup which was created for that purpose. After a suitable period, if there appears to be enough support for the new group, someone will begin collecting votes, which are sent in by e-mail. After the prescribed period, the results are posted to the net, usually accompanied by a list of the voters and how they voted. If there are at least one hundred more "yes" votes than "no" votes, the newsgroup is declared to be created. Control messages are sent out, which cause the Netnews software to automatically add the new newsgroup to the USENET distribution. Most users will have their newsreaders configured so that they will see new newsgroups when they appear. They then can "unsubscribe" if they do not wish to continue reading the new additions.
How does this relate to the PBBS network? There are obviously some aspects of USENET which don't apply, but there are also some useful lessons we can learn. The notion of newsgroups is embodied in the To: field categories mentioned earlier. The limitation of six characters should be removed, possibly making way for a hierarchical naming scheme. The naming of the newsgroups will probably continue to evolve haphazardly for a while with some catching on and becoming popular and others falling by the wayside through lack of use. At some point, it would be desirable to formalize the list of existing newsgroups, and institute some sort of voting procedure for adding new ones. Since the packet-radio news network will presumably continue to emphasize topics related to ham radio, as opposed to everything under the sun as on USENET, I don't expect that the number of newsgroups needed will be nearly as large.

The other important aspect of bulletin/news distribution is the geographical distribution areas, which belong in the @PBBS field of bulletin-type messages. I would like to see a clean division between newsgroups and distribution areas so that the @PBBS field is used for the latter function only. This means that bulletins that are presently distributed to ALL@AMSAT, for instance, would instead be addressed to AMSAT@ALLBBS or, perhaps, SPACE@ALLBBS. If you were entering news on satellite passes in your own area, you would then address it to SPACE@LOCAL (where LOCAL is replaced by whatever is appropriate for distribution in your area). I believe that half a dozen or so distribution areas, ranging from local to worldwide, is all we really need in the @PBBS field. This would be supplemented by a file listing all of the newsgroups, along with various attributes which control how they should be handled by the PBBS.

Among the possible attributes for a given newsgroup are: don't accept articles for that newsgroup; accept articles, but don't retain them locally (for feeding other PBBSs who want that newsgroup); accept articles and make them available to users; archive articles in that group into a text file, etc. The newsgroup file would also be referenced for forwarding purposes, if there is a need to forward only selected newsgroups to other PBBSs.

In order to effectively manage the news (I'd like to get away from calling it "bulletins"), some major changes in the PBBS software is needed. There should be more help available to users entering news articles, so that they can easily get a list of available newsgroups and distribution areas that can be used. The SYSOP needs tools which allows him or her to define these items and also to establish linkages between them which can be used to prevent inappropriate distribution. It should be possible, for example, for the SYSOP to set a limit on distribution area for "for sale" items, and thus prevent the 4SALE@ALLBBS sort of abuse that we have been seeing lately. It should also be possible to set up controls so that articles from users that have very wide distribution are flagged and put on hold so that the SYSOP can review them before deciding whether they should be unleashed on the world. This adds a burden to the SYSOP, but seems to be the only solution to curbing the abuse we are currently experiencing. The situation should improve in time, as the level of user education improves.

Another control which is needed is the ability to flag a given newsgroup as "moderated." In such cases, users would not be allowed to post articles directly to that newsgroup. Instead, they would get a message giving them the name and e-mail address of the moderator for that group and be allowed to mail the article to the moderator if they wish to continue.

For reading the news, the PBBS user interface should provide some of the functions of the USENET newsreaders. The most important function is the ability to allow users to select which newsgroups they want to see. The selection, along with other preferences, would then be part of the user profile stored in the user file. There would be at least one obligatory newsgroup for important local announcements, which cannot be unsubscribed. The news should be kept entirely separate from mail, the two areas being entered with different commands.

In general, the user interface should not only make it easier to selectively find and read news items, but also to interact with them by facilitating the process of responding to them. For instance, the PBBS Send commands should be supplemented with a Follow-up command which would accept as an argument, a message number. It would create a new news article having the same newsgroup, distribution, and subject (prefixed by *Re:* if it isn't already) and the user just has to enter the text. Some means of tracking message threads would be handy too (or at least a command to list articles having the same subject as a particular article). One of the reasons I don't like the term "bulletin" is that it implies a one-way flow of news. I want to see more interactive discussions taking place by means of the PBBS network and software which facilitates such interaction.

There are many possibilities for enhancing the news reading interface, but the important thing right now is to start the evolutionary process in the right direction. Start using the To: field categories which have been suggested, along with others that appear as needed. After this usage has become well entrenched, we can try to standardize a basic set of newsgroups, a method for adding new ones and discuss how the newsgroup name field might best be extended. At the same time, we should only use the @PBBS field for geographical distribution areas. Then the PBBS software writers can have at it and create some of the new tools we need to make the news distribution system work the way it should.

The PBBS network provides a very useful e-mail service for its users, but the bulletin distribution system is degenerating into chaos. We have an opportunity to build it into a truly useful system for distributing and exchanging information, but we must act now. Let's get on with the job!

Comments are welcome.

by Barry McLarnon, VE3JF @ VE3JF
GATEWAY CONTRIBUTIONS

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Stan Horzepa, WA1LOU
75 Kreger Drive
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SIX HAM SATELLITES LAUNCHED SUCCESSFULLY

On January 22 at 01:35:31 UTC, the European Space Agency (ESA) successfully launched its V35 mission, an Ariane 4 booster, from its launch facility in Kourou, French Guiana. On board were six Amateur Radio satellites, two built by the University of Surrey, UO-14 and UO-15, and four MicroSats built by AMSAT-NA, AO-16, AO-17, AO-18 and AO-19. (*UO* is the acronym for UoSAT-OSCAR and *AO* for *AMSAT-OSCAR*).

An errant tape recorder on the primary payload, SPOT-2, delayed the launch from January 9 and bad weather in the area caused a scrub of the launch on January 21. However, a picture perfect launch occurred at the beginning of the ten minute launch window on Sunday evening local time.

The AMSAT Launch Information Network Service (ALINS) brought the launch "live" to thousand of amateurs and interested on-lookers worldwide. Doug Loughmiller, KO5I, President of AMSAT-NA, anchored the net which could be heard on the ham bands covering 160 meters all the way up to Amateur Radio satellites AO-10 and AO-13. Also heard on the ALINS net were a number of the major contributors to this latest effort. Commentary prior to the launch was offered by Tom Clark, W3JIW; Jan King, W3GEY; Martin Sweeting, G3YJO; Jeff Ward, G7/K8KA; Harold Price, NK6K; Dave Cowdin, W9HJHU; and Bob McGwier, N4HY. It was noted that this was also an anniversary for the ALINS net. Twenty years ago, the first ALINS net covered the launch of Australius-OSCAR-5.

KO5I, watching the ESA video feed of the launch, counted down to ignition and lift-off. W9HJHU, who had been at the launch site for over five weeks, gave updates on the progress of the mission from his position at ESA mission control. At approximately three minutes into powered flight (during the second stage burn), the launch commentary ceased. For over a minute, neither W9HJHU or W3JIW, who was monitoring the launch from the NASA Goddard Space Flight Center in Greenbelt, Maryland, offered any information. This silence certainly activated the adrenaline and stopped the breathing of those who were listening. One voice offered some comfort by explaining that ESA had never had a second stage failure in any of its missions. Finally, W9HJHU's voice came through indicating that all systems were "still go." With that message, those listening could begin breathing again. As part of the elation felt by the development team, NK6K (a member of the software team) indicated his delight in recognizing that the satellites were no longer within the grasp of the hardware team and that the satellites were now "all theirs."

At 20:04 minutes of the mission elapsed time, ESA issued a payload separation command to its launch vehicle and UO-14 and UO-15 were freed. A minute and a half later, at 21:29 mission elapsed time, ESA issued two additional payload separation commands and AO-16, AO-17, AO-18 and AO-19 were released. W9HJHU reported that the six separation lights were "all green" indicating confirmation that all six Amateur Radio satellites had successfully separated from the launch vehicle. He also reported that AMSAT was treated in a most professional manner by ESA. Although the primary payload, SPOT-2, (a $100-million observation satellite) was ESA's primary concern, applause from ESA mission control could be heard over the ALINS net as the six satellites were separated from the main launch vehicle.

During the first orbit, AMSAT-LU in Buenos Aires commanded the CW beacon to begin transmitting and it provided vital temperature and battery voltage information to the satellite command team. Although attempts by N4HY to turn on the PSK telemetry beacons during orbit 1 were unsuccessful, all of the MicroSats were transmitting by the end of the last pass (orbit 3) over the west coast at approximately 0700. spacecraft engineers NK6K and W3GEY, operating from W6TRW, indicated that the satellites had either responded to ground command or had switched on their transmitters automatically in order to prevent battery overcharging. WEBERSAT was successfully commanded on from Weber State College in Ogden, Utah during orbit 2. UO-14 and U15 were activated during the first pass (orbit 5) that was visible from the University of Surrey in the UK.

from AMSAT News Service

UO-15 SILENT

Nothing has been heard from UO-15 since January 22. Keplerian elements from Royal Greenwich Observatory show that the MICROsats and UoSats are in a small group, but one object is some five minutes ahead of the others. The UoSAT team is attempting to learn more from other radar sites.

Any accurate reports of UO-15 reception after 2330 UTC on January 22 are solicited. The nominal downlink frequency is 435.120 MHz and transmissions are at 1200-bit/s AFSK FM.

from Jeff Ward, G7/K8KA

LISTENING TO THE UoSATS

On January 22, UO-14 and UO-15 were both successfully commanded on by the UoSAT control station in Guildford. On the 0900 UTC pass, the 435.120-MHz transmitter on UO-15 was enabled and the satellite started transmitting engineering telemetry. UO-14 was first commanded on the 1030-UTC pass. Its downlink is on 435.070 MHz. Further telemetry was received on
the 1200-UTC pass. The downlinks are running at 50% duty cycle, currently 1 minute on and 1 minute off; this may be changed to 10 minutes on 10 minutes off during a later pass.

During the first days of operation, the two satellites will transmit several different data formats. These will all be asynchronous bytes sent at 1200 bit/s using AFSK FM modulation. The data can be demodulated by any UoSAT-1/2 decoder connected to a 435-MHz FM receiver. Unlike UoSAT-2, which uses ASCII characters for most of its data formats, much of the demodulated data from the new satellites will be binary and not printable ASCII. This data will be coming from one of two on-board sources: the dedicated hardware telemetry system, or the 1802 on-board computer operating system (known as the DIARY).

The dedicated hardware telemetry system is built around a custom-designed VLSI manufactured especially for the UO-14 and UO-15 satellites. This telemetry system is independent of all on-board computers and provides UoSAT engineers with a simple way to monitor the health of the satellite. Telemetry is transmitted by the VLSI system in 10-byte "packets," each beginning with the bytes FF FF (hexadecimal). The VLSI system should only be in use for a few orbits, so we will not publish the packet format at this time; if it is used for longer than expected, more detailed information will be distributed.

The DIARY, the FORTH operating system, will allow us to begin more complex operations, such as whole-orbit-data collections, initial attitude determination and deployment of the gravity-gradient boom. The FORTH DIARY will put out printable ASCII data (including a news bulletin) along with binary data formats.

Anyone who can get a binary log of data from UO-14 or UO-15 on IBM disks is encouraged to send them to the UoSAT Team, The University of Surrey, Guildford, Surrey, GU2 5XH, United Kingdom.

from Jeff Ward, G6/K8KA

LISTENING TO THE MICROSCATS

Three of the MICROSCATS, PACSAT, LUSAT and WEBERSAT, are transmitting 1200-bit/s PSK packet-radio telemetry in the 437-MHz range. LUSAT is also transmitting CW on 437.125 MHz. The fourth MICROSCAT, DOVE, has a 2-meter downlink on 145.825, which later will be transmitting synthesized voice, but is now sending ordinary 1200-bit/s AFSK FM packet-radio telemetry which anyone can copy with a "stock" TNC and 2-meter FM radio. No special equipment is required!

On one pass, W3IW1 was able to hear DOVE well on his HT with a rubber duckie when it was 2800 km away at approximately 5 degrees above the horizon. On the radio he normally uses for the W3IW1 PBBS, DOVE is as loud as many local area packet-radio users. DOVE's 2-watt 2-meter transmitter puts out a potent signal!

All six spacecraft are in essentially the same sun synchronous orbit. In the northern hemisphere, you will get two or three evening passes in a window centered on 10 PM local time and two or three morning passes centered on 11 AM local time. All of the passes you can hear will be between plus and minus two hours from these times. Therefore, if you want to copy the packet-radio signals from DOVE flying at 800 km, just tune your 2-meter FM receiver to 145.825 MHz and leave your TNC in the monitor mode. It will transmit for a couple of minutes and then stop for 30 seconds. (To decode the telemetry from any of these satellites, watch the ALL@AMSAT packet-radio bulletins distributed by AMSAT for more details.)

And there's more to come! The Japanese plan to launch OSCAR-20 this month, and astronaut Ron Parise, WA4SIR, will have packet-radio hardware on-board the next flight of the shuttle Columbia (STS-35) in April. (If you are proud of these Amateur Radio achievements, please contact AMSAT for more information on how you can participate in these Amateur Radio space activities. AMSAT's address is PO Box 27, Washington, DC 20044.)

from Tom Clark, W3IWI

NEW ROSE X.25 PACKET SWITCH VERSION IS AVAILABLE

The latest version of the ROSE X.25 Packet Switch (v900104) is now available. New features in this new release include the following:

- Reliable Mode for machine forwarding (aka BBS),
- Call Progress messages to let users know when the connection is complete,
- Application to provide text reason with *** Disconnect/*** Reset messages,
- Support for AEA PK87/88 and PacComm TNC-320 (VHF/HF),
- EPROM defaults now configurable in EPROM,
- InfoText can now be loaded into LOADER,
- A new application called HEARD to collect heard lists,
- Enhanced FRACK handling (needed for HF usage),
- Bug fixes for some cases when "Memory Used" creeps up.

The new ROSE code may be downloaded from the following landline systems:

- PacComm BBS at 813-874-3078 (1200 baud; file area #1).
- W2XQ BBS at 609-859-1910 (1200/2400 baud; packet-radio files area),
- WA6RDH BBS at 916-678-1535 (1200/2400 baud),
- RATS UNIX BBS at 201-387-8898 (1200 baud; login as "raten" and the follow menu).

The ROSE code file name is "RZSW0104.ZIP" and its documentation's file name is "RSWD0104.ZIP." (Both are archived using PKZIP v1.01.)

from Tom Moulton, W2VY@KD6TH.NJ.USA
4TH ANNUAL
SOUTHWEST OHIO DIGITAL SYMPOSIUM HELD

The Fourth Annual Southwest Ohio Digital Symposium was held on Saturday, January 20 under the co-sponsorship of the Engineering Technology Department of the Middletown (Ohio) Campus of Miami University, the Middletown DIAL Radio Club, the Ohio Packet Council and the Cincinnati Buckeye Netters.

There were 114 registrants and another 30 to 40 who attended but did not register. The crowd was broken into two groups - beginners and advanced. It appears that the two were equally attended and equally appreciated.

The "Packet for Beginners" session was moderated by Carl Morgan, K8NHE, and the following talks were presented:

* Introduction to Packet* by K8NHE
* What's After 'MYCALL: NSQ cmd:'* by Chuck Gelm, NC8Q
* Networking for Beginners* by Phil Frazier, KA8TEF
* Basics of DX Packet Clusters* by Jay Slough, K4ZLE
* Build Your Own Computer?* by Bill Nielsen, WB4APC
* An FM Radio Designed for Digital Communications* by Phil Anderson, W8XI
* Emergency Packet Radio* by Tony Dacres, W8MDK

The "Advanced Topics" were moderated by Hank Greeb, N8XX, and included the following discussions:

* State of the Art on 446.5 MHz* by Phil Frazier, KA8TEF, and Vic Kean, K1LT
* What's with 221.11 MHz OHIONET?* by Hank Greeb, N8XX
* TexNet/GLNET* by Jay Nugent, WB8TKL
* The Kantronics DE-56* by Karl Medcalf, WKSM
* G8BPQ PC> NODE* by Karl Medcalf, WKSM
* Update on Cellular Networking in Chicago* by Don Lemke, WB9MJN
* Emergency Packet Radio* by Tony Dacres, W8MDK
* Terminal Control Protocol/Internet Protocol (TCP/IP)* by Gary Sanders, N8EMR
* An FM Radio Designed for Digital Communications* by Phil Anderson, W8XI
* Pushing K9NK Modems and PacComm Gear to 19.2 Kb* by Phil Frazier, KA8TEF
* Linking DX-Packet Clusters* by Jay Slough, K4ZLE
* MSYS and APLink* by Steve Wolf, NO8M

There were demonstrations of 4800-bit/s and 2400-bit/s packet radio, the new Kantronics DVR-2-2 radio, a "show and tell" about TexNet including working hardware. Terminal emulators included several PC/XTs and related devices (one of them home-brewed by WB4APC), a couple of Macintoshes, a simple video terminal and a Commodore with DIGICOM>64. Software, such as the G8BPQ code, MSYS and a variety of others, were on display, as was the HAZMAT file. Several folks brought maps of packet-radio networks of Ohio and the surrounding states. W8MDK had an extensive display of emergency uses of packet radio.

Three interesting bits of information:

1. Kantronics is in production with the DVR-2-2
2. 56-kbit/s cellular is running on a test basis in Chicago over a 30-mile path
3. Michigan seems to be moving heavily toward TexNet/GLNET, with its 9600-bit/s backbone and 1200-bit/s user access

The best news was that a whole bunch of hams sat down with diverse views and varying levels of knowledge about packet radio and calmly and rationally discussed the state of affairs of the 221.11-MHz OHIONET, and the 446.5-MHz MIDNET. No grand solutions to networking for Ohio were proposed (except for solicited plugs for TexNet by WB8TKL and for cellular networking by the contingent from Chicago). It is hoped that this spirit of cooperation continues and grows.

The organizers of the symposium wish to thank Phil Anderson, W8XI, and Karl Medcalf, WKSM, of Kantronics for their very professional presentations in duplicate and triplicate and special thanks to Carl Morgan, K8NHE, and Miami University for the use of their facilities.

  from Hank Greeb, N8XX

PACKET-RADIO NEWSLETTERS WANTED

Your Gateway editor is collecting newsletters from packet-radio groups around the world in order to build a reference library that can be used to trace the development of amateur packet radio. Although, I already have quite a few newsletters (thanks to TAPR President Andy Freeborn, N9CCZ, who kindly sent me his collection), there still are a lot of holes that need filling. So, if you have packet-radio newsletters that you would like to donate to this cause, please let me know what you have (via packet radio or otherwise) and I will let you know if I need them. By the way, I don’t need any old Gateways as I have the complete run.
GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail to:

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or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ NIDCS or IP address 44.88.0.14.)

The deadline for each issue of Gateway is the Saturday preceding the issue date (which is typically a Friday).

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JAPANESE HAM SATELLITE LAUNCHED

Hot on the heels of the successful launch of six Amateur Radio satellites in late January, the JARL announced the successful launch of their new ham satellite, JAS-1b/Fuji-OSCAR-20 (FO-20), on February 7 from the Tanegashima Space Center. FO-20 will function as a PBBS using mode JD (145-MHz uplink, 435-MHz downlink). A one-watt telemetry beacon will transmit PSK packets on 435.910 MHz. To use the PBBS or to monitor telemetry, users will have to attach a 1200-baud PSK modem to a TNC 2.

HELP SOUGHT FINDING U0-15

Following the last reported reception of signals from U0-15 at around 05:00 UTC on January 23, nothing has been heard from the satellite despite continued attempts by the University of Surrey (UoS) engineering team to activate redundant on-board systems.

While UoS will continue to explore redundant paths and configurations available on the satellite, the time has come to investigate whether the spacecraft has suffered a major malfunction. It should be possible to resolve this question by listening for residual signals from the on-board local oscillators (to confirm the operation of the power systems) and any very low-level signals at the nominal downlink frequency (indicating a transmitter or antenna problem). If signals from either the local oscillators or the transmitter can be detected, then there are several tests that can be done to trace the nature and extent of the problem.

UoS would be most appreciative of any assistance in the above listening tests. The level of local oscillator signals present at the spacecraft antenna were measured before launch to be -60 dBm. Examination of the link associated with the above experiments indicates that large antennas and sensitive narrow-band receivers operating in the 132-136 MHz (local oscillators) and 435.120 MHz (downlink transmitter) will be required to stand a chance of success. It is recommended that tests first confirm the detection of local oscillator signals from the operational U0-14 before attempting to listen for U0-15.

It is also very important that we narrow the window between the last reported reception of U0-15 at 05:00 UTC on January 23 and first AOS (or lack thereof) at UoS at 10:00 UTC the same morning. Was anyone else listening? Telemetry would be ideal, but even a report of the presence of a signal from U0-15 on 435.120 MHz would help enormously.

If anyone can help or suggest contacts who may be able to help, please contact Martin Sweeting, G3YJO, at UoSAT.

from AMSAT News Service

GATEWAY TO MERGE WITH QEX

To better serve our growing number of experimenters and packet-radio enthusiasts, Gateway, the ARRL Packet-Radio Newsletter will cease to be published on a biweekly schedule and will be merged into QEX, the ARRL's monthly "experimenters' exchange." Aside from receiving the latest packet-radio news, you will now receive timely articles about packet-radio experimentation and will be kept up-to-date on the latest technical advances in all aspects of Amateur Radio.

After five and a half years of biweekly publication, this is the last issue of Gateway, the newsletter. Gateway subscribers will receive the first expanded issue of QEX in March and monthly thereafter. Gateway subscriptions will be prorated on a two-for-one basis, i.e., for every two issues of Gateway remaining on your subscription, you will receive one issue of QEX. Gateway subscribers who already subscribe to QEX will have their current QEX subscriptions extended on the two-for-one basis.

Going... Going... But Not Gone

It has been a ton of fun and hard work serving as editor of this newsletter for the past two and a half years and I hope you have enjoyed the effort. I wish to thank all of you who have contributed to the newsletter in the past and hope that you will continue to contribute to Gateway in its QEX guise. I also wish to thank Lori "Maty" Weinberg of ARRL headquarters who has served as chief cook and bottle-washer of the newsletter ever since I came on board. Without Maty, you would not be reading this.

In conclusion, although my job of newsletter editor is ending, you aren't rid of me yet, as I will be conducting the Gateway section of QEX. So, see you in March QEX. -Stan Horzepa, WA1LOU
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This is the final issue of Volume 6 of Gateway, and, as in the past, the final issue of a volume contains a subject index of that volume.

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or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ N1DCS.)

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