NCPA Downlink

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Serving Amateur Radio Digital Communication in Northern California

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Linux and Amateur Radio

Bruce Perens AB6YM

Introduction

Linux is actually pronounced "Lean-ix" because the person who wrote it is named Linus, but in Finland, that's pronounced "Lean-us". The American pronunciation is "Line-ux." Linus Torvalds, a Finnish graduate student, wrote a clone of the 25-year-old Unix operating system "kernel" a few years ago. Linus and others combined the kernel with utility programs that had been written at U.C. Berkeley and others that had been contributed to the Free Software Foundation's *GNU* project and the result was an entire operating system, compatible with Unix, that could be distributed for free with all of the source code included.

To compare Linux to what the equivalent Windows '95 software would be, say you bought a copy of "Windows '95," a copy of "Microsoft Plus", a copy of "Visual C," an Assembly-language development system, a few other computer languages like SmallTalk, and some network servers. Then, you could buy a PostScript interpreter program for your printer and a 3D rendering program to make pretty pictures. Let's say you couldn't afford to wait for Microsoft's customer service to fix bugs, so you bought all of the source code for the programs and operating system. What would that cost you? ... Are you kidding, they'd never let you buy the source code. So, Linux gives you something that you simply can't get from Microsoft, Apple, SGI, etc.

Who would want Linux? Why not use Windows?

Well, let's just say "if your VCR is still blinking 12:00, you don't want Linux." There's a saying that marketing people have about programmers: "leave a programmer alone and he'll come up with the kind of product that only a programmer could love." That's what Unix is and Linux too. Actually, other kinds of propeller-head such as hardware designers, mathematicians, etc., have been known to be comfortable with Unix and Linux. But, why use an operating system that only a nerd could love? Well, you want them to write more software, don't you? Unix and Linux are the most comfortable platforms for the development of sophisticated software that communicates, controls hardware, does complicated math... what I'm trying to say is that it's the best platform for developing the kinds of software that Radio Amateurs need.

How do I learn about Linux?

There's an acronym that you'll hear a lot in the Unix world: **RTFM**. That means "Read The #=@%~#@ Manual." I saw a whole bookcase full of good books on Unix and a whole shelf on Linux at the Barnes and Noble bookstore the other day. That's another way that you can tell if Linux is right for you or not — if you don't like to read the manual, it's probably not time yet for you to use Linux, because it's not that user-friendly yet. You don't really have to drop lots of money on books, though. Linux comes with a lot of on-line documentation - you may have seen the "Linux Bible" books that are two inches thick or more - all of that documentation is on-line. It would take me a year to read all of it, no kidding.

If you *are* a programmer, on the other hand, you've probably either learned to use Unix and program in C or C++, or you should. Let's call that "employment insurance," at least for people in the Bay area, where there are literally tens of thousands of C, C++, and Unix-related jobs. If you're an applications programmer or a hardware engineer, you might want to learn how to become an operating systems programmer. Linux is very good for that because you can turn a cheap PC into a full-fledged Unix workstation and make all of your mistakes on it at home where your boss can't see.

Continued on page 4

In This Issue

President's Corner

Gary Mitchell WB6YRU

Pacificon '96

The NCPA will again have a table at Pacificon. This year it looks like we will have less to sell, but more demonstrations to show off. Howard N6HM will have his packet remote control demo. Mike WA6ZTY will bring a portable BBS station so people may try working a packet BBS without there being any problems trying to link to a nearby BBS with only a small antenna inside the building. We may also have an APRS demo. If you have something of a digital communications nature that would make a good demonstration, please let me know. We also still need volunteers to help out at the table.

We will sponsor two talks: "Packet Satellites" by Carol W9HGI, the satellite gateway for this area, and "Packet Questions and Answers." Many of the personal messages addressed to far-away places are forwarded via packet satellite, Carol's talk will give us a behind-the-scenes look at how it works. The Packet Q&A will be similar to previous years; there will be a few experts up in front to answer any questions or problems folks might have regarding packet. We had also planned to again have "Introduction to Packet" but were unable to get a speaker; perhaps next time.

About the newsletter

Obviously the Downlink still isn't back on a regular schedule. After the last issue (in which was said we needed an editor), some activity has occurred. One person volunteered (who shall remain nameless), but unfortunately managed to make himself scarce without doing anything. On the bright side, Larry Eker WA0YQM has recently agreed to fill in as editor shoes. Hopefully, he'll be on the job very soon.

Since the Downlink is supposed to be a quarterly publication, memberships will be adjusted so you will receive at least four issues for each year's dues. Again, on behalf of the NCPA, sorry about this.

BBS forwarding

Some of you may know of the BBS forwarding problems and disagreements that have been festering between certain stations in the Monterey and San Francisco bay areas for some time now. I'm happy to announce that agreements and accommodations have been reached and at last report traffic is flowing with great abandon. There is still a snag to be worked out in one spot, but hopefully, a solution can be worked out there as well. Anyway, the good news is that the situation is definitely improving.

On a related topic, some sysop's in the San Francisco area are talking to sysop's in the central coast area about putting in forwarding nodes to extend the backbone all the way south to the So. CA region. It's still in the idea stage, but if they can pull it off, this would be a big improvement for moving BBS traffic up and down the state. If you have equipment you'd like to donate, expertise to volunteer, or know of a good hill-top site

Continued on page 3

The NCPA *Downlink*

Editor:
Gary Mitchell, WB6YRU
BBS: WB6YRU@N0ARY.#NOCAL
Internet: wb6yru@arasmith.com

Layout/Typesetting:
Eric Williams, WD6CMU
BBS: WD6CMU@WD6CMU.#NOCAL
Internet: wd6cmu@netcom.com

Printing:
Bob Arasmith, N0ARY
BBS: N0ARY@N0ARY.#NOCAL.CA.USA.NOAM
Internet: tenney@well.sf.ca.us

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The President's Corner

Continued from page 2

in the area east or south of Monterey, you might want to drop a note to Mike WA6ZTY. (packet: WA6ZTY @ WA6ZTY.#NOCAL.CA.USA.NOAM)

They come and they go...

One of the packet BBS gateways in the NOCAL region, WA6RDH has closed up shop. KM6PX is taking over the gateway functions of WA6RDH. There's a LOT to setting these things up and making it all work properly; so, hats off to KM6PX for picking up the ball and running with it.

KC6KGE BBS at the southern end of the central valley (Bakersfield/Taft) has also decided to "pack it" in (sorry about the pun). No word yet on a new BBS in that area to fill the gap.

The Gilroy area (GARLIC LAN) has a new BBS: KO6LX

New Board

Elsewhere in this newsletter you will find a list of NCPA directors. We haven't had anyone representing APRS interests lately, now we do. So, in my view, the current board is more balanced.

Meeting Notices

The board of directors usually meets four times a year; also there is the annual general meeting (usually in April or May). Notices are sent out on packet as bulletins to BOARD@NCPA NCPA@NCPA. If you are interested, keep an eye out for bulletins with the flood designator of NCPA.

73 everyone,
Gary, WB6YRU

FCC affirms 219-220 MHz

From ARRL Headquarters Newington CT January 31, 1996 To all radio amateurs The FCC has affirmed the secondary allocation of 219-220 MHz for Amateur Radio. The action, for the most part, denies a Petition for Reconsideration filed by Orion Telecom, an Automated Maritime Telecommunications System licensee. Orion had argued to rescind the decision to allocate 219-220 MHz to ham radio saying the 50-mile exclusion distance between AMTS and amateur operations was insufficient to protect primary AMTS operations from harmful interference. Orion asserted that a 575-mile exclusion distance was necessary, which would have precluded Amateur Radio operation in many areas. AMTS coast stations use 219-220 MHz to receive, and 217-218 MHz to transmit. The FCC did agree with Orion's concern that the amateur rules do not adequately specify the frequency range of AMTS operations. The FCC amended its rules to specifically call attention to the fact that one must look at 217-218 MHz assignments to know what AMTS coast stations are operating in a given area. ARRL Executive Vice President David Sumner, K1ZZ, says the League is pleased that the FCC reaffirmed its commitment to provide some relief to the Amateur Service at 219-220 MHz to offset the loss of access to 220-222 MHz. He says the ARRL has a procedure in place to ensure that amateurs planning to use 219-220 MHz are aware of their obligations to avoid harmful interference to other services.

[Note from the NCPA President: The latest word on this sub-band comes from our ARRL Pacific Division Director, Brad K6WR... Evidently, the difficulties with having to get permission from the AMTS folks still is a problem. Permission can be refused and there is no appeal. Brad says the last thing we want to have happen is to give them a chance to refuse that permission, so the ARRL is proceeding very carefully. While that work is in progress, potential users of this sub-band are asked to stand by. The NCPA is maintaining contact with Brad and will pass on any new developments. --WB6YRU]

FCC Creates New Low-power Radio Service

From "The ARRL Letter" August 2, 1996

The FCC has created a new Low Power Radio Service (LPRS) in the 216-217 MHz band. The Part-95 service will be authorized on a secondary, noninterference basis for short-range communication to include auditory assistance devices for persons with disabilities; health-care assistance devices; law-enforcement tracking systems; and point-to-point network control communications for Automated Maritime Telecommunication Systems (AMTS).

LPRS transmitters will not require individual licenses. Transmitters must be type-accepted. Maximum ERP is 100 mW. Bandwidths may range from 5 kHz to 50 kHz, although the rules permit AMTS wideband emissions up to 250 kHz in the upper portion of the band.

Linux and Amateur Radio

Continued from page 1

How does this all connect to Amateur Radio?

Well, on most systems you run a communications program to operate via packet. Under Linux, packet radio is part of the "kernel" which is the central part of the operating system. In fact, the packet radio functionality uses the same software interface as the Internet communications component of the system. The result of this is that any program on the system that can communicate on the Internet is also a packet radio program. For example, you can run Netscape over the air. It's kind of slow for pictures even with a 9600 baud TNC, but it works. Since the operating system takes care of the details of communicating over packet, it also becomes very easy to write a new packet application, since you don't have to write any software to control the TNC — the operating system is doing that for you. Also, since the operating system is multiprocessing, you can run multiple packet applications and multiple connections simultaneously.

Currently, the AX.25 level 2, TCP/IP, and NetROM protocols are all supported by the Linux operating system. The AX.25 applications supported are a BBS, a "connect" program used to make AX.25 connections to another system, "converse", a call sign server, and packet DX cluster. NetROM uses the same applications as AX.25. The TCP/IP applications supported are the RSPF routing protocol, Telnet (which is like "connect"), FTP (the file-transfer program), SMTP (the background mail delivery system), a World Wide Web server, several different World Wide Web clients, and "IP tunneling" which is used by gateway stations. There are device drivers for all TNC's that are capable of operating in KISS mode, Ottowa PI and PI2 cards, cards based on the SCC chip, etc.

So, it's clear you can communicate using Linux. What else can you do? There's a printed circuit board design program. It's a multi-layer drafting program, unfortunately it doesn't take schematic input and auto-route a PC for you. There are two circuit simulators, "Spice" and "ACS." Both of those have text interfaces, although I'm exploring a schematic-entry program from Caltech that can be used with Spice. There's a code-practice program. A satellite tracking program can be used to point your rotator automatically. You can control the Yaesu FT-890 transceiver and software for other radios is being developed. There's a software oscilloscope and a software audio spectrum analyzer, both of which use a sound card for their input. There's even a "global clock" program to show you what parts of the earth are in sunlight, dusk, or darkness.

If you want to write software, there are compilers for C, C++, Objective C, SmallTalk, and Fortran. All of these come with Linux - they aren't expensive extras as they would be on a Microsoft system. There are interpreters for the languages Python, Perl, and AWK. The "Make" program-generating program is included. There's a PostScript interpreter that lets cheap dot-matrix printers print PostScript documents. There are several typesetting programs included that can set the type of one-page letters or entire books. There are also hundreds of other programs for all sorts of purposes from balancing your checkbook to mastering a CD-ROM. All of the programs come with their source code and they are enthusiastically supported by their authors and other parties on the Internet. As an example of the high-level of customer support you can expect from volunteers on the Internet, I'd suggest you look at the Debian World Wide Web page I mentioned before. There's a formal bug list that you can visit from that page. About 1600 bugs covering the hundreds of programs in the Debian distribution have been reported there over the last few months. Most of those have already been repaired, one or two hundred non-critical bugs are currently open. That's a lot better record than Windows '95.

I'm convinced, where do I get it?

First, you can download Linux from the internet. I'd only suggest this if you have a way to download hundreds of megabytes without going broke - otherwise, you can get Linux on an inexpensive CD-ROM. If you'd like to download the entire system, start with the World Wide Web site www.debian.org. That site is the home of the Debian Linux Distribution, which I recommend because I helped write it. You can also buy a CD-ROM containing **Slackware** or **Debian** for as little as $15. The last alternative is to buy a CD called **Linux for Hams** from me for $30. The advantage of "Linux for Hams" is that it contains the Debian Linux system along with all of the ham radio programs already set up for you to use, along with a U.S. call sign database. With the other discs, you'd have to spend time downloading the ham radio programs from various FTP sites and compiling them and you'd have to buy a Callbook CD-ROM separately. The bad news is that "Linux for Hams" isn't finished yet, so I can't sell it to you today. There's a saying about programmers - "programmers don't do it, they just tell you how good it's going to be". That's the embarrassing position I find myself in - hopefully I'll have software to deliver soon. Until then, I'd ask that if you're interested, you sign onto my Web site, www.hams.com, where there's a form that lets you join an Internet mailing list for announcements about "Linux for Hams."

What kind of computer will I need?

You'll need a PC-compatible computer with a 386, 486, or Pentium processor, or a clone of one of those processors. You need at least 4 megabytes of memory, more is better. You need 150 megabytes of disk, either IDE or SCSI. You need a CD-ROM drive and a VGA video card. Fortunately, most of this equipment is getting cheaper by the minute. Both CompUSA and Fry's are selling a SoundBlaster double-speed CD with the interface drive for $70. VGA cards can be had for $30, and a one gigabyte IDE hard disk costs less than $300. A full Pentium multimedia system can be had for $1000 or less.

Can I run Windows on that computer too? I want to run Quicken and stuff.

You can always shut down Linux and boot another operating system like Windows. Right now, Linux has a windows emulator that is 90% done. It won't be

Packet Sysop's Of Northern California (PSNC) BBS Coordination Procedure

This is the procedure to be followed when applying to join the network as a new Bulletin Board station or if you have significantly changed your configuration and require re-coordination.

1. It is the responsibility of the applicant to contact the PSNC BBS Coordinator and request a new sanction.
2. The BBS Coordinator will send the applicant a "Coordination Package," consisting of the current PSNC BBS listing, this policy statement, as well as other items of use during the sanctioning process.
3. The BBS Coordinator will instruct the applicant to contact the gateway operator, all sysop's on the same frequency, and any other sysop's affected by his proposed operation.
4. The BBS Coordinator may also make suggestions as to whom to contact. The BBS Coordinator is in no way obligated to make such suggestions, nor is he required to mediate such contacts.
5. The applicant will contact the gateway and any co-channel sysop's affected by his operation to attain their assent to his operation. If the gateway or sysop's have concerns, the applicant will make every effort to privately resolve them. The applicant will thoroughly document all efforts to resolve such conflicts.
6. Upon acquiring the consent of gateway and co-channel sysop's, the applicant will notify the BBS Coordinator. The BBS Coordinator will verify that the proper consent has been attained.
7. The BBS Coordinator will make a public notice regarding the new application and solicit comments for a two week period. All comments should be directed to the BBS Coordinator, in private.
8. The BBS Coordinator will advise the applicant of any concerns raised during the comment period. It is the responsibility of the newcomer to privately resolve these concerns as well. The applicant will thoroughly document all efforts to resolve such concerns.
9. The BBS Coordinator will again confirm that all conflicts arising during the comment period are resolved.
10. The BBS Coordinator will present any disputes that cannot be resolved to the PSNC for resolution at its next meeting. At that time, the efforts documented in steps 5 and 8 above will be reviewed and weighed.
11. The BBS Coordinator will then make public notice of the new coordination, at which time the applicant shall be considered coordinated.

[Editor's note: the BBS coordinator is Roy Wysling, KA6EYH @ KA6EYH]

Linux and Amateur Radio

Continued from page 4

useful until it's 100% done, although you can run the solitare program and other simple Windows applications under Linux now. It also has a DOS emulator that is pretty good, though somewhat difficult to configure.

I solved the problem of needing to run Linux for Ham Radio, Windows for Quicken, and my wife's business by building a new computer and telling my wife that the old 486SX computer was hers. I put Windows '95 on her computer and we use that one to run Quicken and Microsoft Office. It's connected to the Linux system via Ethernet. Since Linux can share files over the network with Windows '95, I have the backup tape drive on the Linux system and also share some of the disk space of the Linux system with Valerie's Windows system. The Linux system also acts as our mail hub and Internet gateway. Valerie also runs Netscape and an Internet mail program on the Windows '95 system. The modem that we use to connect to the Internet is on the Linux system. The packets of Netscape and the mail program are relayed through the Linux system to the Internet automatically. Valerie's system is also capable of communicating with the packet TCP/IP network, since the Linux system will send packets to that network as well as the Internet. I use a network firewall program to make sure that unauthorized packets from the Internet aren't forwarded to the packet radio network.

Northern California Packet Band Plan

50 MHz

51.12	SOCAL backbone
51.14	Experimental
51.16	Keyboard to Keyboard
51.18	Experimental

144 MHz

144.91	Keyboard to Keyboard
144.93	LAN[1]
144.95	DX Cluster
144.97	LAN
144.99	LAN
145.01	APRS
145.03	Keyboard to Keyboard
145.05	Keyboard to Keyboard
145.07	LAN
145.09	LAN
145.61	9600 bps[2]
145.63	Keyboard to Keyboard
145.65	TCP/IP 9600 bps
145.67	DX Cluster
145.69	LAN
145.71	9600 bps
145.73	LAN
145.75	TCP/IP
145.77	DX Cluster
145.79	LAN
146.58	DX Cluster

[1]Some TCP/IP in Sacramento grandfathered

[2]BBS forwarding in Monterey Bay area on minimal interference basis.

220 MHz

223.54	Node uplink (East Bay)
223.56	Node uplink (West Bay)
223.58	Node uplink ("Garlic")[1]
223.60	Node uplink (Sacramento Valley)
223.62	Node uplink (South Bay)
223.64	TCP/IP
223.66	Keyboard to Keyboard
223.68	LAN
223.70	Node uplink (Monterey Bay & N. Coast)
223.72	Node uplink (North Bay)
223.74	DX Backbone

[1]TCP/IP interlink (Sacramento) Not to interfere with node uplink.

440 MHz

441.50	Any

Packet channels below 440MHz are available, but must be coordinated on a case-by-case basis as auxiliary allocations in conjunction with NARCC. Contact WD6CMU for details.

900 MHz

903.500	1 Mhz wide - TCP/IP
904.500	1 Mhz wide - TCP/IP
915.500	1 Mhz wide - Experimental
916.100	200 Khz Wide - Experimental
916.300	200 Khz Wide - Experimental
916.500	200 Khz Wide - Experimental
916.650	100 Khz Wide - Experimental
916.750	100 Khz Wide - Experimental
916.810	20 Khz Wide - Experimental
916.830	20 Khz Wide - Experimental
916.850	20 Khz Wide - Experimental
916.870	20 Khz Wide - Experimental
916.890	20 Khz Wide - Experimental
916.910	20 Khz Wide - Experimental
916.930	20 Khz Wide - Experimental
916.950	20 Khz Wide - Experimental
916.970	20 Khz Wide - Experimental
916.990	20 Khz Wide - BBS links (Contra Costa County only)

900 MHz activity is on a non-interference basis to vehicle locator service. 900 MHz is not considered suitable for omindirectional systems, use for point-to-point links only.

1296 MHz

1248.500	1 Mhz wide - Experimental[1]
1249.000 to 1249.450	Unchannelized - Experimental
1249.500	100 Khz wide - Experimental
1249.600	100 Khz wide - Experimental
1249.700	100 Khz wide - Experimental[1]
1249.800	100 Khz wide - Experimental[1]
1249.870	20 Khz wide - Experimental
1249.890	20 Khz wide - DX Packet Cluster
1249.910	20 Khz wide - Experimental[1]
1249.930	20 Khz wide - Experimental[1]
1249.950	20 Khz wide - Experimental[1]
1249.970	20 Khz wide - Experimental[1]
1249.990	20 Khz wide - Experimental[1]
1250.500	1 Mhz wide - Experimental
1251.500	1 Mhz wide - Experimental
1297.000 to 1298.000	Unchannelized - Experimental
1298.500	1 Mhz wide - Experimental[1]
1299.000 to 1299.450	Unchannelized - Experimental
1299.500	100 Khz wide - Experimental
1299.600	100 Khz wide - Experimental
1299.700	100 Khz wide - Experimental[1]
1299.800	100 Khz wide - Experimental[1]
1299.870	20 Khz wide - Experimental
1299.890	20 Khz wide - DX Packet Cluster
1299.910	20 Khz wide - Experimental[1]
1299.930	20 Khz wide - Experimental[1]
1299.950	20 Khz wide - Experimental[1]
1299.970	20 Khz wide - Experimental[1]
1299.990	20 Khz wide - Experimental[1]

[1]Full-duplex channel pairs: 1248 <-> 1298 and 1249 <-> 1299, eg: 1249.910 <-> 1299.910

Northern California Packet Band Plan

Continued from previous page

Definitions

Experimental — Anything goes except full service BBS or any 24 Hr/Day services (nodes, gateways, etc). This is where you can come and test new gear, programs, etc. These channels may be reassigned in the near future so no permanent activities please.

Backbone, Uplink, Interlink — No uncoordinated stations. These channels are for specific purposes as defined by the NCPA and affiliated groups. This is where the various BBS, nodes, and clusters interlink and are very high usage channels. Please use the normal 2 meter entry points of the network you want to access rather than these channels.

Keyboard to Keyboard — Anything but full service BBS, TCP/IP, or DX Cluster. Primarily chat channels. These are also the primary emergency channels.

Personal BBS — A BBS, often running entirely within a TNC, with a small number of users that handles information of a personal, local, or special-purpose nature. A PBBS is allowed on keyboard-to-keyboard channels only if it does not forward with other BBSs (personal or otherwise). PBBSs may forward with full-service BBSs on LAN channels at the discression of the BBS's SYSOP.

LAN — Local Area Network. Anything except TCP/IP and DX Cluster is tolerated. Please avoid placing high level digipeaters or nodes on these channels since they are local. A low-level node that links into a backbone on another frequency is the preferred implementation.

TCP/IP — Stations using TCP/IP protocol on top of AX.25. Some AX.25 tolerated to communicate to TCP/IP stations if p-persistance access method used.

DX Cluster — Northern California DX spotting network. No other activity should be on these channels.

9600 Bps — Stations using 9600 Bps with direct FSK (G3RUH, TAPR, etc.) modems.

Procedure for changes

Users should contact either the frequency coordinator or the NCPA board. The frequency coordinator will then present the requests to the board at the next meeting along with suggested assignments. The NCPA board elected by you, the packet user, makes all assignments!

Electronic mail is preferred.

Note: NCPA does not coordinate individual stations, nodes, etc. The only station coordination is done by KA6EYH for bulletin board systems.

EOF

Where to Find a BBS

N0ARY-1	Sunnyvale	144.93, 433.37
KE6BX	Hollister	144.93
N6VZT	Brentwood	144.93
KJ6FY-1	Benicia	144.93
AC6NY	San Ramon	144.97
WD6CMU	Richmond	144.97
N6EEG	Berkeley	144.97
N6LDL	Los Gatos	144.97, 145.71[1], 441.50
KD6JZZ-2	Sonora	144.97, 223.54
WA6EWV-1	S. Lake Tahoe	144.97
KA6FUB	Martinez	144.99, 441.50
KO6LX	Gilroy	144.99
KE6LW-1	Yuba City	144.99, 441.50
W6PW-3	San Francisco	144.99
W6SF	Stockton	144.99
N6IIU-1	Palo Alto	145.07, 223.56
KM6PX-1	Citrus Heights	145.07, 441.50
KC6PJW	Rohnert Park	145.07, 441.50
WA6NWE-1	North Highlands	145.09, 441.50, 144.93[2]
WA6YHJ-1	Livermore	145.09
KK6WD	Redding	145.09
KB6AML	Concord	145.09, 441.50
KB5IC	Almaden	145.63
KD6KWM	Santa Rosa	145.63
KE6LW-1	Yuba City	145.63
WA6HAM	Pittsburg	145.69
KA6EYH-2	Daly City	145.69, 441.50
KA6JLT-2	Menlo Park	145.73, 145.71[1], 441.50
AA6QR	Orinda	145.73
KB6MER-1	San Jose	145.73
KA6EYH-2	Pacifica	145.75[2]
W6YX-9	Stanford U.	145.75[2], 433.43[1]
WH6IO	Benicia	145.75[2], 433.43[1]
K7WWA	Willits	145.79
W6CUS-1	Richmond	145.79
N6QMY-1	Fremont	145.79

[1]9600 baud port

[2]TCP/IP port

NCPA Board Meeting Minutes

January 28, 1996

The NCPA Board of Directors meeting took place at Valley Memorial Hospital in Livermore on Sunday January 28th at 10:00 AM. Present were the following board members:

N6HM, N7YYG, WB6YRU, WD6CMU Also in attendance were: KD6KWM, W6BNG, WA6HAM

1. The meeting was called to order at 10:35.

2. NARCC AND NCPA. CENCA and NCPA representatives were invited to the NARCC directors meeting. WB6YRU and WD6CMU attended. The FCC would like to know who the frequency coordinators are in each region and be able to contact them. The ARRL has suggested a "single point of contact" entity. In response to this, U.S. coordinators (mainly repeater coordinators) are in the process of forming the National Frequency Coordinators' Council, NFCC. NARCC has expressed a desire to be the sole representative for Northern California, having others in this area go through them. It was moved, seconded and passed that NCPA send a note to the NFCC indicating that we would like to be included, as a repre- sentative of other than voice repeater frequency coordination. It was moved, seconded, and passed that a letter will be written to NARCC suggesting further discussions between our groups to enable the formation of an umbrella spectrum management committee as a contact point for the FCC, under which would be the NCPA, NARCC, and possibly CENCA, once it organizes under a constitution.

3. 219-220 BAND CO-ORDINATION. Granted the secondary use right, after AMTS, it is anticipated a digital backbone-like use will be allocated to this spectrum, using a higher than 9600 baud rate. The primary users, AMTS, must still be notified, which complicates amateur radio usage. All 219-220 activity is currently on hold pending work by the ARRL.

4. CENCA. One or two sysop's in the CENCA BBS region have been sending out packet band plans. The NCPA board considered the recognition of CENCA as an organization and their authority to band plan. According to all available facts, including their own statements, CENCA clearly does not have the structure nor attributes of an organization. After much discussion, the board voted to not recognize CENCA as an organization nor its authority to engage in band planning. The NCPA would like to work with CENCA in how they would like to proceed. It was moved, seconded, and passed that we formulate a memorandum of understanding to NARCC that we recognize them to be responsible for voice repeater coordination, and that NCPA continue to be the sole organization responsible for digital mode frequency coordination in Northern California.

5. BBS FORWARDING. There is a high level BBS forwarding node on 145.09, a BBS User frequency. A motion was made to re-allocate 145.09 to forwarding or experimental use. The issue was tabled until PSNC could be consulted.

6. 144.93 (LAN FREQUENCY) USE BY W6GO. It was indicated that DXPSN was using this frequency in the Redding area. It was brought up that this is only tem- porary and will move as soon as repeaters are repaired.

7. 440 COORDINATION. There is only one 440 frequency allocated to packet. The issue of requesting more band allocation was tabled till the letter of understanding is written to NARCC.

8. NETWORK PLANNING SERVICES. A network planning service will be instituted to provide assistance to repeater/node owners/operators. KA6FUB, K3MC, and WA6AEO will be involved with this. It is anticipated that this could help with efficient node placement and use.

9. PACKET BOOKLETS. It was moved, seconded and passed the the older, outdated "Introduction to Packet" and "Introduction to TCP/IP" booklets be donated to clubs and distributed at NCPA meetings.

10. GENERAL MEETING. Possible topics for the next general meeting, tentatively scheduled for April, were discussed.

11. BOARD MEETING. The next board meeting will be held directly after the general meeting.

12. The meeting was adjourned at 13:57.

Jeri Bissell, N7YYG NCPA Secretary

NCPA Board Meeting -- May 5, 1996

The NCPA Board of Directors meeting took place at Valley Memorial Hospital in Livermore on Sunday May 5 at 1:30 PM after the general meeting. Present were the following board members:

WB6YRU, KA6EYH, WA0YQM, K6TAM, KQ6EF, and W9HGI

PACIFICON Pacificon '96 chair is Greg Estep KE6BTA We will again have two tables. WA6ZTY can bring a portable BBS for demonstrations. We may be able to work out an APRS demo with WB6LPG. WB6YRU, WA6ZTY, W6BNG, WA0YQM, and W6HGI volunteered to help at the table (depending on the programs). This is a good start, but we could use a few more.

We will try to have the following session (if speakers can be found): "Packet Q & A" (possibly WB9LOZ, WA6ZTY) and "Intro to Packet" (possibly WA6AEO, KA6FUB). Bruce AB6YM has already signed up to do three sessions: TCP/IP, High Speed Packet, and Linux.

FORWARDING NODE WA6LIE has a site at Mt Madonna and would be willing let someone setup a forwarding node there. (Line-of-sight to Gilroy area, SF Bay Area, and Monterey Bay).

NCPA BAND PLAN Changes to DEFINITIONS section: Keyboard to Keyboard -- The last sentence reads "Some existing BBS systems (e.g. WA6RDH) were grandfathered." It was pointed out that this was a temporary measure and expired years ago. This last sentence is now obsolete and shall be removed.

LAN -- The second sentence reads "Anything except TCP/IP and DX cluster is tolerated." It was pointed out that originally, BBS user freqeuncies were set up to relieve keyboard users from excess traffic, not to keep keyboard activity off of LAN frequencies. Since keyboard-to-keyboard traffic tends to be relatively light compared to user-BBS traffic, keyboard use is tolerated on LAN frequencies, but not "anything" as stated. That sentence shall be changed accordingly. Also, a statement defining "LAN frequencies" as packet BBS user frequencies is to be included.

144 MHz section: Note 1 "Some TCP/IP in sacramento grandfathered on 144.93" should be removed, (i.e. grandfathering expired). Have frequency coordinator (not present) look into this; are they still active? If so, why aren't they on 145.65 or 145.75?

W6BNG (Livermore) reports hearing FM voice and repeater activity with strange offset on 145.63 LAN frequency. He will try to get call signs and other information, then report back.

220 MHz section: Note 2 "East Bay uplink to be moved to 223.56" is incorrect and should be removed. (The East Bay uplink is staying on 223.54)

Note 3 "TCP/IP interlink in Sacramento is not to interfere with Gilroy node uplink". Have frequency coordinator (not present) to look into this, see if the TCP/IP is still active. If so, why aren't they using 223.64?

219-220 MHz The ARRL is trying to work out something so amateurs will be able to use this new allocation without running into problems of being turned down by AMTS. (Amateurs must currently get permission to operate 219-220 from any AMTS station owner within some distance. There is no provision for appeal if denied.) Until something is figured out, amateur activity on this subband is on hold.

440 MHz section: We have only one frequency, 441.5 MHz. Some other packet activity is being coordinated by NARCC. The propriety of this was discussed with the idea of eventually obtaining a block of 440 frequencies for packet.

It was mentioned that there is some effort by APRS to establish a nation-wide 440 frequency.

OLD BUSINESS Steve WA6HAM (not present) was supposed to be working on a first draft of a Memorandum of Understanding between the NCPA and NARCC. No word yet on its status.

CENCA BBS sysop's K6RAU and KC6KGE (who have been speaking for CENCA and putting out a band plan of their own) were contacted regarding the NCPA board vote to not recognizing CENCA as an organization with authority to make a band plan and related matters. K6RAU is no longer coordinating BBS's in CENCA. The last word from KC6KGE is that they are thinking about our message and will get back to us.

N6IYA (who has been forwarding on a two-meter BBS user frequency with his high-level node) has agreed to use a beam on that node (pointed at him) and keep the power down, provided the NCPA allocates at least one two-meter frequency for BBS forwarding. The NCPA seems willing to do this, but first wants to get the opinion of the PSNC. The PSNC chair has been contacted and this will be on their agenda (meeting will probably be in July).

New business ---------- New TEKK digital radios (440) reportedly have 5 watts and can be

NCPA Board Meeting Minutes

Continued from page 8

ordered with filters to operate at 9600 or 19200 baud.

DXPSN hasn't be very involved with the NCPA recently. We should look into this. For example, if they have meetings, their minutes should be in the Downlink as are minutes from the PSNC.

The Livermore club has a new DXPSN node coming on line.

We will try to have the next board meeting on Saturday August 10, at 1 PM in Sunnyvale (N6QMY, N6HM). If a location isn't found WA6ZTY says we can meet in Berkeley. Also, we should try to have the following board meeting at Pacificon (October).

Adjourned 3:00 PM

-- WB6YRU reporting, (on behalf of the Secretary)

August 11, 1996

The NCPA Board of Directors meeting took place at the Lawrence Berkeley Labs (thanks to Mike WA6ZTY), on Sunday at 1:20 PM after the PSNC (sysop) meeting.

Present were the following board members: WB6YRU, KA6EYH, WA0YQM, W9HGI, WB6LPG, and WD6CMU Also present were: KA6QNN, WB9LOZ, W6BNG, and WA6ZTY

SELECTION OF OFFICERS Jeri N6YYG no longer wishes to be secretary. Steve WA6HAM has suddenly resigned as treasurer.

President - Gary WB6YRU (inc.) Vice President - Eric WD6CMU (inc.) Secretary - Carol W9HGI Treasurer - Roy KA6EYH Editor - Larry WA0YQM

Appointed positions: Frequency Coordinator - Eric WD6CMU (inc.) Education Coordinator - Larry WB9LOZ (inc.)

The question of making Frequency Coordinator and Education Coordinator "regular" officers (which would mean changing the bylaws) was considered. It was decided to leave these positions as appointed.

DOWNLINK STATUS There has been no word from the existing editor, Rich WA6YHJ, despite repeated messages. It's past time for the next issue; therefore, Larry WA0YQM is now the editor.

PACIFICON No speaker could be found for the "Introduction to Packet" talk, so that one is canceled.

The NCPA will host a new talk: Packet Satellites by Carol W9HGI.

Panel for "Packet Q & A" session: Mike WA6ZTY, Eric WD6CMU, maybe Larry WB9LOZ. It was suggested that Mike K3MC and Larry N6SLE be contacted also. Gary WB6YRU will be on the panel if it looks a little thin.

Our table will have a remote control packet demo by Howard N6HM. Mike WA6ZTY will bring a portable BBS, but another station will be needed for that demo. Eric WD6CMU may bring a packet station or Bill WB6LPG knows someone (Mike AC6JA) who might be willing to donate the use of a small portable packet station.

Volunteers for the table: WB6YRU, WA6ZTY, W6BNG, WA0YQM, and W9HGI. We need more, but of those present, no more could commit to it.

BOOK DONATION The NCPA board voted to donate the remainder of its supply of "Introduction to Packet" and "TCP/IP Primer" books to amateur radio clubs. WB6YRU reports he has done this. 188 of the Intro books and 219 of the TCP books were distributed to 24 clubs and organizations in No. CA. A few books were held in reserve for the NCPA.

NFCC UPDATE A new national organization of coordinators has just formed: NFCC Inc. (National Frequency Coordinators' Council). Their primary function is to act as a single point of contact between coordinators, FCC, and ARRL. For the most part, this is a group for repeater coordinators. How they will work with packet coordinators remains to be seen. They are now in negotiations with the ARRL regarding recognition, duties, and financing.

MEMORANDUM OF UNDERSTANDING At a previous meeting, it was decided to have a Memorandum of Understanding between NARCC and the NCPA. Steve WA6HAM (previous experience with NARCC) was supposed to be working on a rough draft, but nothing has been done.

PACKET ON 70CM It was previously suggested that work on getting a block of packet frequencies in the 70 cm band come after the MoU was established with NARCC. NARCC (repeater coordinator) claims to have jurisdiction over essentially the whole band. The consensus is that this is not right and can't be condoned--no one band belongs to a single interest. Much discussion followed... It was pointed out that the NCPA has just as much right to coordinate frequencies in the 70 cm band for packet as NARCC does for repeaters. It would be better to work with NARCC on this matter rather than allocate a block around them, but it may come to that. Howard N6HM previously suggested we start with the band plan published in Feb. 1996 QST (p 103 lists packet on 430.05-430.95 and 441.00-441.075; mixed mode on 432.10-432.30 and 432.40-433.00; and shared including packet on 445-447). It was decided that we start negotiations with NARCC and see how it goes.

APRS REQUEST OF 70CM FREQ Bill WB6LPG has made a request for a 70 cm frequency for APRS, preferably 445.925 (which is quickly becoming a national APRS frequency). Bill reports there is evidently little activity on this frequency here. The board suggests APRS proceed in exploring the possibility of using 445.925, but the NCPA shouldn't officially make that allocation at this time.

BBS FORWARDING ON 2M To solve a number of problems, it was previously proposed that a channel be allocated in the two-meter band for BBS forwarding. This was tabled until the PSNC could comment.

The PSNC response was: Two meters is relatively cheep and easy, so should be reserved for the average user. It may not be an issue for some areas, but in densely populated areas two-meter packet frequencies are in high demand. Once the door is opened for forwarding, it could easily soak up too much band space away from users. Therefore, forwarding should not be done on this band. However, in order to solve the problems in question, the PSNC suggests adding a footnote to the allocation on 145.61 (9600 experimental) to the effect that there is BBS forwarding in MRYBAY LAN on this frequency. Allocation exceptions like this are already done (e.g. 223.58 has TCP/IP on BBS forwarding channel). Forwarding on 145.61 should be 9600 baud if possible.

The board approved the PSNC suggestion. The allocation of 145.61 remains 9600 baud experimental, but will now contain the note: "BBS forwarding in MRYBAY LAN."

VIRTUAL METINGS Some people have said the NCPA covers too much territory for face-to-face meetings to be practical for some people. To make it easier for people in widely separated areas to participate, the business conducted at meetings is now approved to take place electronically. Internet is preferred over packet because it allows more privacy for discussions of delicate matters and tends to be much more reliable and faster. Furthermore, real-time group discussions are possible on the internet.

Possible remailer sites are N0ARY and KA6EYH. Mike WA6ZTY says he can probably (85 percent sure) have a remailer set up quickly. The likely address is ncpa@csg.lbl.gov (nobody should attempt to use this address until it is set up and functional.)

145.01 AND APRS Bill WB6LPG reports not hearing anything on 145.01 (APRS freq.) from the BBS/node WA6RDH. It was pointed out that WA6RDH is closing his BBS and nodes effective Sept. 1, 1996.

NEW BUSINESS Eric WD6CMU reports that Don Smith (Pres. of NARCC) is interested in publishing the NCPA band plan in the NARCC newsletter. The consensus was that this would be fine.

Bill WB6LPG reports that 145.79 is becoming a national APRS frequency and asked if there was a way to make it so here. The NCPA allocated 145.79 as a BBS user channel, 145.01 is allocated for APRS. It was suggested that these allocations be swapped. The BBS's on 145.79 will be contacted and asked if they would consider moving their user ports to 145.01. If they all agree, the NCPA will consider the allocation swap.

[Note: After the meeting, Bill consulted with fellow APRS folks and they would rather keep the allocations as is. Therefore, no further action will be taken on this subject.]

NEXT BOARD MEETING If we can get a room (free) at Pacifcion, the next meeting will be there. Otherwise, another place and time will be selected, probably later.

-- Gary WB6YRU, recording for the secretary

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PSNC Meeting Minutes

Sunday, August 11, 1996

The PSNC met at the Lawrence Berkeley Labs (thanks to Mike WA6ZTY). The meeting was called to order by Larry WB9LOZ at 10:35 AM.

Present were the following: Larry WB9LOZ (WBAY), Mike WA6ZTY (NBAY), Gary WB6YRU (SBAY), Roy KA6EYH (WBAY), Mel W6BNG (EBAY), Eric WD6CMU (NBAY), Willis N6VZT (EBAY), and Carol W9HGI (Garlic).

REPLACEMENT OF WA6RDH BBS/BATEWAY/NODES WA6RDH is closing as of Sept. 1, 1996. Mike KM6PX in Sacramento will take over the functions of RDH as LAN gateway. The SACVAL LAN members are working on procuring equipment for nodes and will have the new system ready as soon as possible. Their biggest problem is money for equipment.

KA6EYH reports that when WA6RDH shuts down, his node on the 9600 baud BBS backbone on September 1, the North Coast LAN is planning to come up with a node for their LAN on Sonoma Mountain. They have not been able to put a node on line in the past because the Sonoma Mountain and Mt. Vaca sites could not see each other and hidden transmitters are not permitted on the backbone. WB9LOZ said that he would inform the SACVAL LAN sysops of this information.

PROPOSAL FOR FORWARDING CHANNEL IN THE TWO METER BAND The NCPA want's the PSNC's comments on its proposal to allocate a BBS forwarding channel in the two-meter band. This would provide a means for forwarding on difficult paths and eliminate the problems developing from N6IYA's high-level node on 145.09. These include interference with BBS user channels on 145.09, restricted forwarding, sanctions, lockouts on both sides, and the EBAY gateway's dumping of traffic that would have passed through the 145.09 node.

There was much discussion... Two meters is relatively cheap and easy, so should be reserved for the average user. It may not be an issue for some areas, but in densely populated areas two-meter packet frequencies are in high demand. Once the door is opened for forwarding, it could easily soak up too much band space away from users. So, the consensus was that a forwarding channel in the two meter band is not a good idea.

It was recognized that the NCPA's proposal originated from the private negotiations of WB6YRU with N6IYA in an attempt to alleviate the increasing number of problems stemming from forwarding operations at IYA's node on 145.09. Those negotiations resulted in the following agreement: If the NCPA allocated a forwarding channel in the two meter band, N6IYA would move the node to that frequency, put a beam on it pointed at him, and reduce the power to the minimum necessary to maintain a reasonable link.

Eventually, it was decided that while forwarding in the two meter band should be discouraged, it might be allowed in this case if this is the only way to solve these problems. Several options were mentioned. The winning idea was to suggest that the NCPA add a footnote to the allocation on 145.61 (9600 experimental) to the effect that BBS forwarding in MRYBAY LAN exists on this frequency. It was pointed out that such exceptions already are done. Also, forwarding on 145.61 should be 9600 baud if possible.

DUMPING OF MRYBAY TRAFFIC Discussion of various forwarding problems -- blocking/dumping of traffic, who forwards to whom, etc. The resolution (above) regarding forwarding on 145.61 is expected to end the dumping of traffic at the EBAY gateway. Other forwarding problems involving WA6RDH are expected to get resolved after KM6PX takes over from RDH as LAN gateway.

BULLETIN FORWARDING PROPOSAL N6VZT proposed the following changes in addressing and flooding of bulletins. He points out that most of the nation seems to be adopting these specific changes. Also, this plan would allow for targeting bulletins to specific areas.

Region codes: Our region (Northern California) code of #NOCAL would become #NCA.

It was mentioned that some BBS's treat the region code as optional and others require it. The proposal includes requiring the region code.

Flood designators: The region flood ALLCAN becomes NCA. ALLCA becomes CA. A flood that doesn't fit, such as WCA (West CA) would be treated as CA. This would at least be better than what happens now. ALLUS becomes USA. ALLUSW becomes WUSA. The "ALL" should be dropped in other flood designators; the SBAY flood of ALLSCV (all Santa Clara Valley) would be SCV or the LAN name SBAY.

Example: A message addressed to someone at W6PW in San Francisco would become xxxx@W6PW.#NCA.CA.USA.NOAM and a bulletin flooded to the NOCAL region would become xxxx@NCA

It is suggested these changes take place over the next twelve months during which time both formats will be accepted.

The proposal was approved unanimously.

The CENCA and SOCA regions will be notified that NOCAL has decided to adopt this scheme. It is hoped they will also consider adopting it. If they do, the region codes #CENCA and #SOCA would become #CCA and #SCA and the floods for those regions would become CCA and SCA respectively.

[Note: after the meeting it was pointed out that a start date should be specified. September 1 is the recommended start date.]

GATEWAY PROBLEMS FOR SBAY LAN The SBAY gateway N0ARY currently has no connectivity to the backbone and only passes traffic via the internet link to KA6EYH.

WB6YRU reports the radio links at N0ARY don't seem to be working very well. The BBS is likely to move to the San Jose Red Cross before too long and considerable work/improvements/enhancements could be made then.

KA6EYH reports he is looking into setting up a node at Mt Allison, East of San Jose which would provide connectivity to the backbone for SBAY, Garlic, and the central valley. The site is 2600 ft. It seems the backbone node stack at Crystal (not AMT) may go away soon. The Allison node (if it happens) will replace Crystal.

NEW GILROY BBS IN GARLIC LAN W9HGI reports the BBS KO6LX in Gilroy is not quite up and running yet; still a couple of problems to work out. Its user channel will be 144.99, forwarding on 222.14 MHz. WB6ZVW continues to be the Garlic gateway. The Garlic LAN is still in the process of getting settled.

NORTH-SOUTH BACKBONE WA6ZTY reports they are still looking for a good site, (working with a group in San Luis Obispo). Mt. San Benito is a possibility, (5000 ft). It would give a good path to the central valley as well as the coast. Fremont peak is another choice.

A path south is needed, especially 9600 from the Bay Area to L.A. Currently, traffic goes through a chain of BBS's in the central valley.

MISCELANEOUS WB9LOZ reports the node HAM-10 on Crystal peak seems to be down.

WA6ZTY reports the Northern Nevada BBS network seems to be operating smoother these days.

W9HGI reports P & T traffic destine for the East coast could be sent to her for forwarding via packet satellite.

--- Gary WB6YRU, recording

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NCPA Annual General Meeting Minutes

NCPA General Meeting -- May 5, 1996

The NCPA annual general meeting took place at Valley Memorial Hospital in Livermore on Sunday May 5 at 10:23 AM.

Downlink

The newsletter hopefully will start getting back on schedule. Rich Gill KQ6EF volunteered to be the new editor. WB6YRU (temp editor) will help get Rich up to speed, providing articles and information already gathered for the next edition.

NFCC

There is a National Frequency Coordinator's Council in the process of forming. Evidently, it's primarily formed by repeater coordinators, but they seem interested in including all coordinators. The general aim is to provide a single point of contact between coordinators, ARRL, and FCC. The NCPA has been in contact and will continue to keep up on its progress.

Pacificon

We had two tables last time with demonstrations and sposored some sessions on packet. It seemed to go over well. Something similar will be done this year.

Web page

The NCPA has a web page — http://arasmith.com/~ncpa

Intro booklets

The NCPA is in the process of donating "Introduction to Packet" and "TCP/IP Primer" books to members and other amateur radio clubs.

Speaker

Carol Byers W9HGI, sysop of the Gilory satellite gateway, gave an interesting talk on packet forwarding via satellites. Her station serves the states CA, AZ, NV, and UT. There are usually six passes per day and about twenty messages can be moved per pass. There has been a drop-off of traffic lately (from 80 MB to about 45 MB per day), probably due to internet forwarding.

Board of Directors

Incumbent directors wishing to continue are:

Gary Mitchell WB6YRU (BBS)
Roy Wysling KA6EYH (BBS-TCP/IP)
Larry Eker WA0YQM (user)

The following directors were not present, but indicated a willingness to continue as directors:

Bob Vallio W6RGG (DXPSN)
Howard Krawetz N6HM (keyboard)
Eric Williams WD6CMU (BBS)

Additional nominations are:

George Fisk K6TAM (APRS-keyboard)
Rich Gill KQ6EF (APRS, new editor)
Carol Byers W9HGI (satgate)

Also, Roy KA6EYH nominated WB6LPG (major player in APRS) who was not present. All were voted in unanimously. If WB6LPG accepts, there will be ten directors, (the bylaws allow for up to eleven).

Activities of the NCPA were discussed briefly.

Adjourned 11:50 AM

WB6YRU reporting
(on behalf of the Secretary)

EOF

NCPA Directors

Eric Williams, WD6CMU
WD6CMU @ WD6CMU
510-237-9909
wd6cmu@netcom.com

Bob Vallio, W6RGG
W6RGG@N6LDL
510-537-6704
wsixrgg@crl.com

Roy Wysling, KA6EYH
KA6EYH @ KA6EYH
415-355-2281
ka6eyh@muncey.com

Howard Krawetz, N6HM
N6HM @ NOARY
408-739-7936
73112.717@compuserve.com

Gary Mitchell, WB6YRU
WB6YRU @ NOARY
408-265-2336
wb6yru@arasmith.com

Larry Eker WA0YQM
WA0YQM @ N6QMY
510-489-3074

George Fisk K6TAM
K6TAM @ KI6EH
k6tam@aol.com

Rich Gill KQ6EF
KQ6EF @ WA6YHJ
510-862-0425
richsnol@ix.netcom.com

Bill Bliss WB6LPG
WB6LPG @ KA6EYH
415-726-0662
wbliss@coastside.net

Carol Byers W9HGI
W9HGI @ W9HGI
crlbyers@garlic.com

NCPA Officers

President:
Gary Mitchell, WB6YRU

Vice-President:
Eric Williams, WD6CMU

Secretary:
Carol Byers W9HGI

Treasurer:
Roy Wysling KA6EYH

Temporary Newsletter Editor:
Gary Mitchell, WB6YRU

Newsletter Editor Elect:
Larry Eker WA0YQM

Frequency Coordinator:
Eric Williams, WD6CMU

Education Coordinator:
Larry Kenney, WB9LOZ

What is NCPA?

NCPA, the Northern California Packet Association, is an organization formed to foster the Digital Communications modes of Amateur Radio. So far, we have defined our goals as:

- **Education**
- **Coordination**

Education means making information available about various Digital modes, and this newsletter is but one part of that education process.

Coordination activities include frequency coordination (NCPA is recognized by NARCC as the official packet radio frequency coordinator) as well as coordinating people and their various uses of packet radio, be they DX Cluster, BBS, TCP/IP, keyboard-to-keyboard, NET/ROM, Traffic/NTS, Emergency uses of packet, or even experimenting with new frontiers of various digital modes.

We in NCPA believe that the next revolution in Ham Radio will come about in digital communications technology and in the beneficial coordination among all users of ham Digital Communications Technologies.

NCPA *Downlink*

Northern California Packet Association
PO Box 61716
Sunnyvale, CA 94088-1761

First Class Mail