New Message Forwarding Rules Released by FCC

Changes in message forwarding rules were announced in the April, 1994 issue of The ARRL Letter. A portion of the announcement is reprinted with the permission of the ARRL.

"The FCC on April 13 released its Report and Order in PR Docket 93-85, regarding messages relayed by amateur high speed networks. The new rules, effective June 1, 1994, will establish what the FCC calls 'a compliance policy for automatic stations participating in automatic message-forwarding systems.'

"The new rules relieve most station operators in such networks of responsibility for the content of messages relayed by their stations. Under current rules, all licensees in a chain of forwarding stations are responsible for message content.

"Originators of messages continue to be responsible for their content, and the first forwarding stations are responsible either for the content of the message or for verifying the identity of the originator.

"The new rules also will relieve repeater control operators of responsibility for inadvertent retransmission of communications that violate the rules. All operators remain responsible for discontinuing communications that violate the rules as soon as they become aware of their presence."

The exact wording changes are in Parts 93.7, 97.109, 97.205 and 97.219. In the June 15, 1994 issue of The ARRL Letter a clarification was published: "In response to a request from the ARRL and inquiries from others, the FCC's Private Radio Bureau has clarified new rules that went into effect on June 1, 1994. The new rules do NOT remove restrictions against automatic control of digital and RTTY transmitting below 50 MHz."..."The FCC currently has under consideration two petitions for rule making, RM-8212 and RM-8280, that address this subject..."

Although the new rules were described as 'Good News' by the ARRL, not every SYSOP saw the changes in that light. SYSOP Mark Bitterlich, WA3JPY, in the July, 1994 issue of QST pointed out the darker side of the rules. He says that the rules impose requirements upon the originating BBS that are difficult to implement. For example, the rules state that the SYSOP of such a station must "authenticate the identity of the station from which it accepts communications or accept accountability for the content of the message." Since there is at present no way to authenticate identities, Mark says that his only choice is to hold all messages that will be forwarded until they can be read and reviewed. He reminds us that this is no way to run a high speed network.

Stan Horzepa, WA1LOU, Editor of Packet Perspective, the column in QST containing Marks comments said, "Mark makes a good point. However, the responsibility he describes is one that has always belonged to the SysOp as well as, until now, to every other station operator in the chain. So the SysOp has no new responsibilities, just the same one he's always had and with a new way of fulfilling it. This combined with the relaxed message-content rules the League won last year, makes his job easier, not harder...."

The observation of many is that while some changes to the rules may make it easier to comply with these requirements, there is still a large gap in the entire process and at present there is no apparent solution. The SySop is still subject to enforcing rules with no real means of doing so.

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Editorial

Mike Chepponis, K3MC
Downlink Editor

Hello, all, for issue #13 of the NCPA Downlink!

Yes, yes, it has been some time since our last issue, and I deeply apologize.

And, we've got a new Newsletter Editor who promises to generate fantastic issues regularly! Please meet Richard, WA5HQJ, and let's give Richard our support & encouragement!

As for me, I've been caught in a number of trying events.

First, my dad, Peat, N3HVB (an NCPA member, by the way) became a Silent Key on November 10, 1993. I was there at his side as he sucumbed to prostate cancer, I having flown in just a few hours earlier. He was one hell of a guy, always helping me put up antennas on our small row house in Pittsburgh, PA where I grew up, or helping to build some piece of radio equipment, or using some of his tools & expertise to help me construct some haywired contraption. I will miss him dearly.

Then, my mom, Mildred, passed away on January 12, 1994. Again, I was with her in the hospital, after a red eye flight. She was not especially sick, but she probably couldn't bear living without Peat. She had survived lung cancer seven years earlier, but the emphysema got worse and worse until she died due to heart trouble and Chronic Obstructive Pulmonary Disease brought on by years of heavy cigarette smoking. I will miss her very, very much.

So, I'd like to dedicate this issue to my parents, for their devotion to their kids; I hope my wife and I raise our daughter as well!

Now, as to this issue, I thought that since it has been such a long time in coming, we should do a Double Issue! Normally, we run 16 pages, but this time, I think we'll run a bit longer.

We've got a "Packet History" article that really give us some perspective on Packet on the West Coast. One of my all-time favorite programs, NOS, gets exposed in this issue. The complete FCC HF NPRM is here, as is our superb NCPA Education Coordinator, WB9LOZ.

I've also included some info on SSTV, because although most SSTV today is not "digital", more and more folks are using PCs for SSTV, and more and more are sending digital picture files; it is probably one of the upcoming trends in Amateur Radio today! We've also got a list of World Wide Web Internet sites that have ham info - if you're on the Internet, check these out!

We're also reprinting our Constitution in this issue, because we haven't done that in a while.

And, of course, we have our usual batch of reports from NCPA Board Meetings, and some things from NCXPN as well.

So, I've enjoyed being editor these years, and I know that we all look forward to WA5HQJ's first issue of The Downlink!

Vy 73,
Mike K3MC

...-.-

Message Addressing and Tips

Gary, WB6YRU

If you send out a message on packet, it's assumed you'd like the recipient to actually receive it. Some messages never reach their intended destination for a variety of reasons, most of the time it's because of incorrect addressing. An incorrectly addressed message usually gets held by the first BBS to notice a problem. The sysop must then try to figure out what's wrong and fix it, if possible. Virtually all forwarding on the packet network is done automatically by relatively dumb computers; so, accuracy in addressing is important. Here is some basic information to help you send your messages and to help us get it there.

Address Parts

The full address of a packet message has three parts: the "TO" field, the "AT" field, and the HLOC (Hierarchical LOCation address, sometimes called "H-address"). The TO field is a person or bulletin topic. The AT field is a person's home BBS or in the case of a bulletin, a "flood descriptor," (code specifying the distribution range). The HLOC is to packet what the city/state/country/zip is to U.S. mail. Think of this as an extension to the AT field.

The TO field should contain one of these:

- For a personal msg. — A specific call sign (the recipient)

- For a bulletin — A category or group (limited to a six letters)

The AT field should contain one of these:

- For a personal msg. — the recipient's home BBS (call sign)

- For a bulletin — one of the following:

NOARY (or the call of your BBS)
ALLCAN (CA North)
ALLCA (the whole state of CA)
ALLUSW (West half of the U.S.)
ALLUS (the whole U.S. of A.)
WW (world wide)

There may be local flood descriptors specific to your area, here are a few:

ALLSCV (Santa Clara Valley)
EBAY (East Bay Area)
MRYBAY (Monterey Bay Area)
NBAY (North Bay Area)
NCPA (Same as ALLCAN)
SACVAL (Sacramento Valley)
SBAY (South Bay Area, similar to ALLSCV)
SLV (San Lorenzo Valley, Northern Santa Cruz County)
VIP (Volunteers In Prevention— Santa Cruz/San Mateo Ranger Unit)
WBAY (West Bay Area)

The HLOC (H-address)

Bulletins usually don't have a HLOC, the flood descriptor is sufficient. Personal messages can be routed to an unknown BBS anywhere in the world with a complete address—just like ordinary mail. The HLOC for Northern California is: #NOCAL.CA.USA.NOAM. Forwarding stations would generally read this from right to left as: continent, country, state, and region.

The WW flood is not supported by many BBS's. ALLUS is often abused and increases the traffic load. In these cases, WW is worse and is therefore rejected by many BBS's.

Personal Messages

Some BBS's (NOARY, W0RLI, F6FBB and perhaps others) will allow you to send a personal message to someone's call sign only (e.g. SP W6ABC). If the person is active on

packet, he/she will most likely be in the database and the complete address will be filled for you. If the person is not known, you must put his/her home BBS in the AT field (e.g. SP W6ABC @ K6XYZ).
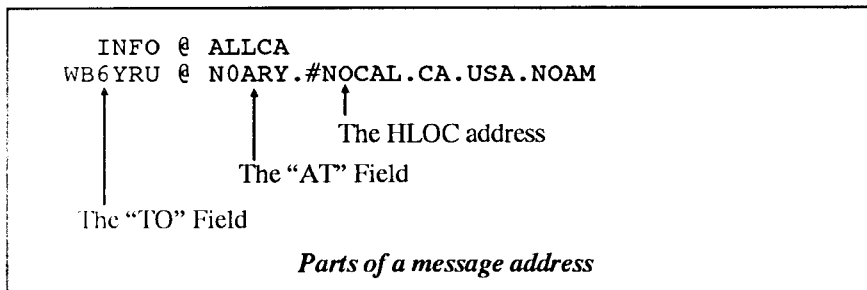
Some BBS's may require you to include the HLOC. Find out if this is the case with your BBS. It's best to not include the HLOC yourself unless you must; a typo here will almost guarantee problems.

Many BBS's require you to connect to their call with a dash and a number (e.g. NOARY-1). This is called a SSID (secondary station ID) and allows the one call sign to be used in a variety of ways. For example, NOARY-1 may be the standard BBS port, NOARY-2 may be reserved for forwarding stations, and NOARY-3 may be a node (not a BBS), etc. It's important to remember that SSID's are only used for connecting to the BBS and should never be used in message addressing. In this example, the BBS is NOARY, not NOARY-1. The "-1" only has meaning when connecting over the air. If you send a message to your friend K6ABC @ NOARY-1, it may not get there.

Some of the newer TNC's will allow you to put a forwarding style "R line" in your message header and "forward" your messages to your BBS (or vice versa) as if your TNC were a BBS. There is a problem with this: Some systems use that header information to automatically maintain their database. As soon as your header passes through one of these systems, your call will be logged as a BBS; however, no path information will exist. A BBS must be known to the network, you can't just refer to your TNC as a BBS. Other forwarding stations will not know how to route messages to you. The bottom R line in message headers identifies the originating BBS, it is used for automatic reply addressing (when using the SR command). If your own call sign is there instead of your home BBS, you may never receive the reply. So, if your TNC has this feature it's best to disable it.

Bulletins

When sending bulletins, think about what you have to say and who you want to see it. The packet radio network is NOT a limitless resource. Nobody in

```
   INFO  @  ALLCA
WB6YRU  @  NOARY.#NOCAL.CA.USA.NOAM
   |         |      |
   |         |      The HLOC address
   |         |
   |        The "AT" Field
   |
  The "TO" Field
```

Parts of a message address

their right mind would go for a joy-ride on the freeway during rush hour; likewise, a bulletin about the time of a local radio club meeting shouldn't be sent to ALLUS. ALLUS & ALLUSW should be used sparingly and only if you have something of interest for the whole country. SALE bulletins or something of local interest sent to ALLUS or ALLUSW are very much frowned upon.

Many BBS's allows users to list entries according to the various fields. For example, you can list all bulletins sent to SALE with a single command. Many people do just that. If you sent a SALE bulletin to 4SALE, then the people who wish to buy something (your intended readers), will not see your bulletin. Some SALE bulletins are addressed to 4SALE, 4SAL, SELL, $ALE, SAL, SELLIN, FORSAL, ALL, MUSTGO, etc. This is a good way to miss some of your target readers.

Consider this bulletin:

ALL @ ALLUS Subj. ICOM

What is this bulletin? Is the author selling one, wanting to buy one, giving information about ICOM, or asking for help with one? Consider these bulletins:

INFO @ xxx   Subj.: ICOM
audio problem fix

HELP @ xxx   Subj.: ICOM 735
wiring to TNC

SALE @ xxx   Subj.: ICOM 735
w/pwr supply

WANT @ xxx   Subj.: ICOM 500
Hz CW filter

(xxx being the flood descriptor of your choice.) Now, don't these make a LOT more sense? #1 is someone GIVING info/tips. #2 is someone looking for help connecting his rig to the TNC. etc.

You want your intended reader to notice your bulletin in the listing (which can be quite long); so, the wording of your subject is also very important. It's usually counterproductive to trick people into reading your bulletin or use a bunch of funny characters or control-G's in the subject text. In fact, bulletins with control-G's in the subject are summarily killed at some BBS's.

The category "ALL" is misused and overused. Many sysop's suggest not using it at all. If you can safely say there's hardly an amateur out there who wouldn't want to read your message, then you may send it to ALL; however,

this is very rarely the case. The TO field is the bulletin category, it separates your message from the crowd. When you send your bulletin to ALL, you've made it one straw in a big hay stack—it may get ignored more often than not.

Some suggested bulletin categories are in the table below. There are many others, but these are the more common ones.

General tips:

1) Don't use the "-" or "_" in the TO field. Some BBS's will truncate at that point. The category of T-HUNT may get truncated to just "T"; use THUNT instead or maybe EVENT.

2) Avoid starting with a number, (e.g. 96KB). Some BBS's have trouble listing these out properly.

3) Don't send a bulletin to a call sign.

4) Try to find (and use) an existing category before making up your own.

5) The category CQ is a bit vague. It's better to send a bulletin on a topic you would like to discuss. This is not like being on the air.

6) Don't send to INFO when you are really asking for help. Don't send to ALL when you are trying to sell something. These are common mistakes.

7) Make your subject as descriptive and complete as you can within about 30 characters. Many BBS's allow more space than this in the listing, but some cut it off after 30. Notice how much room

the subject has the next time you list messages. Attention-getting gimmicks are usually worthless.

8) Repeating the bulletin category in the subject is redundant and just wastes space. For example, if you need help with HF packet, send a bulletin to HELP with a subject like: "starting with HF packet," rather than: "help starting with HF packet."

9) Don't send out multiple copies of your bulletin to different categories. This just adds to the network congestion and won't improve readership.

10) If in doubt, ask your sysop. Don't just try something and hope it will somehow work out—it won't! And your poor overworked sysop will have to clean up the mess.

11) If you've made a mistake on a message just sent, kill it and try again. You can kill any message from you or to you. But don't wait, it may get forwarded soon.

12) Send personal messages with the command SP (send personal) and bulletins with the command SB (send bulletin). It's inappropriate to send personal messages as bulletins.

13) Remember: 73 means best wishes. 73's is incorrect—this is like saying best wishes's. You wouldn't say that would you?

Have Fun! 73, Gary, WB6YRU (co-sysop for N0ARY)

EOF

Category	Description/Use
ALL	Of interest to just about EVERYONE.
DEBATE	Some topic being bandied back and forth.
DX	DX related postings.
EVENT	Something going on in the area (usually local).
EXAM	VE Exam sessions.
HELP	If you're LOOKING/ASKING for any type of help.
HUMOR	Joke or funny story.
INFO	If you're GIVING any type of information.
KEPS	Keplerian Elements.
QSL	QSL info., routes & Managers.
SALE	Items for sale.
SWL	Short Wave Listening.
SYSOP	Sysop directed postings (often sent as personal).
TRADE	Items offered for swap/trade (SWAP is sometimes used).
USERS	For the average user (as opposed to sysop's etc.).
WANT	Items wanted (usually to purchase, trade, etc.).

Here in the Northern CA area, you may also see these:

CPRL	CA Packet Resources List (this is a specific INFO item)
NCPA	For members of the Northern CA Packet Assn.

Some suggested "standard" bulletin categories

SSTV Information

(Editor's Note: With increasing frequency we're seeing hams send not only text over our current networks, but also audio, picutres, and video! I thought it would be a good time to look at the technology of SSTV to see how it could be adapted to the current Digital World! -Mike)

Slow Scan Television has been around for a few decades but it never got very much attention. The reason is that commercial equipment was very expensive and and it was much too complicated for most people to homebrew. The situation has changed radically in the last couple years. Rather than using expensive special purpose hardware, most of the newer systems are using personal computers to do most of the work. There is now a wide assortment of free software that uses very simple interfaces and ready-to-use commercial systems at affordable prices.

New people are showing up on SSTV everyday.

Although SSTV activity has exploded during the last couple years, it's still hard to find much modern information. The most recent SSTV handbook published in the U.S. (that I know of) is now almost 20 years old. Technology has changed quite a bit since then.

A very popular introductory book about Ham Radio (no names mentioned but it's available at Radio Shack) devotes only a few sentences to SSTV and describes it as 8 second black & white pictures. It's been nearly all color pictures for many years.

The CQ 1994 Equipment Buyer's Guide lists only two SSTV products and neither is manufactured anymore.

Here is one of my attempts to help combat this lack of information. This file contains some background on SSTV, a list of equipment available, and pointers to other sources of information.

Detailed specifications and prices have been avoided because that could be considered advertising. This file is being distributed over the Internet and Ham Radio Packet BBSs where advertising is not appropriate.

Some outdated and just plain wrong information keeps getting passed back and forth between various lists of SSTV equipment. A couple months ago I sent letters to 29 different suppliers asking about their SSTV and related products. Some letters were returned as undeliverable. Most of those who did not respond have been dropped from the list. A couple that didn't respond are still listed because the products are believed to be still available.

As with anything else, there are some good products available and some real junk being sold with deceptive advertising. Just get on the air and ask what

The President's Letter

Bob Arasmith, N0ARY
NCPA President

The general membership meeting this year had some surprises, new faces eager to participate. And not wanting to miss an opportunity to take advantage of this we quickly made them board members.

Jeri Bissell (N7YYG), was elected to the board and subsequently as the new secretary for the organization. When you stand near Jeri you get organized, it's amazing.

Gary Mitchell (WB6YRU), was elected as a board member. I met Gary a couple years back when he was complaining about my bbs, so I turned around and made him a sysop. Now that he has my board pretty well straightened out he has moved on to the NCPA. I have no doubt that he will be president soon.

Another new face is Bruce Perens (AB6YM). Bruce came to the first board meeting full of ideas for improving Pacificon and jumped right in to head up the effort. When he calls on you to help out please participate.

Joe Pistritto (N3CKF) joined our board as a representative for the APRS system. Joe showed his knowledge and public speaking ability when he gave us an impromptu talk on aprs at the general membership meeting. Education is our primary goal and Joe fits that mold.

And our last addition to the board was Richard Shappee (WA5HQJ) as our new Downlink editor. Mike (K3MC) had asked earlier in the year to retire from the position and when I asked for help finding a new editor at the general meeting Richard stepped forward. Richard has been a bulldog about trying to get people's articles for the next issue.

Please join me in welcoming our new additions to the board.

Pacificon is coming up next month and it looks to be another great program. In the past our sessions have attracted large audiences. This is good and bad. The upside is packet is gaining in popularity but it has downside, we are in real need of elmers for the hobby. Bruce (AB6YM) is trying to pull together a list of elmers to be published. If you are interested in participating please drop by

the booth at Pacificon and see Bruce. And while you are there talk with some people. It can be a lot of fun.

As I mentioned earlier, education is the primary goal of the NCPA. If there is anything we can do to help your local clubs promote packet please ask. We have speakers available in most areas and we have publications that can help get people started. If you don't have packet just send a note to the PO box on the back cover.

It has been a while since our last Downlink. If nothing else it teaches us just how much we take the editor's job for granted. It takes a lot of time and effort to pull an issue together. If you have an article that you think would be interest to packet users please send it to Richard.

And my personal thanks to Mike for working as editor for the last couple years. Mike has been the editor in the past and when we lost our last editor he offered to fill in. Now Mike will be able to get back to experimenting and writing articles for the Downlink.

Hope to see you at Pacificon. **EOF**

SSTV Information
Continued from page 5

people are using and how they like it. Caveat emptor!

Background

There are several different ways to send images over ham radio:

1. RTTY art - Remember when people made pictures from characters?

2. FSTV (Fast Scan TV - Also called ATV) - Similar to broadcast TV. Full motion, color, sound, etc. Restricted to UHF and up because a signal requires several MHz of bandwidth.

3. WEFAX (weather facsimile) - Very high resolution gray scale images sent by audio tones over a period of minutes.

4. SSTV (Slow Scan TV) - Low to medium resolution still images sent through audio channels over a period of several seconds to a few minutes. Mostly color these days.

5. Digital SSTV - We have the technology but I haven't seen any proposals yet.

Transmission Modes

The original 8 second SSTV transmission mode (around 1958) had the following characteristics:

> black = 1500 Hz
> white = 2300 Hz
> gray levels in between
> 120 scan lines
> 15 lines per second
> 5 mS of 1200 Hz for horizontal sync
> 30 mS of 1200 Hz for vertical sync

Since that time many more modes have been invented, sometimes to add new capabilities, sometimes the result of Not Invented Here syndrome.

The major groups are:

Robot - Introduced with the Robot scan converters (California).

Wraase - Introduced with the Wraase scan converters (Germany).

Martin - Developed by Martin Emmerson (England). First available as replacement PROMs for Robot 1200C.

Scottie - Developed by Eddie Murphy (Scotland). First available as replacement PROMs for Robot 1200C.

AVT - Developed by Ben Blish/Williams (Montana). First available in the AVT system.

The Robot, Wraase, Martin, and Scottie modes are all closely related. They all use the tones above for black, white, and gray levels. They all have 1200 Hz horizontal sync, although some Martin and Scottie implementations rely on accurate crystal oscillators and ignore the horizontal sync once synchronized. Color is generally transmitted by sending each scan line 3 times, once each for red, green, and blue components. Robot is different from the rest in that it encodes colors with luminance (Y) and chrominance (R-Y and B-Y) instead of R,G,B.

Each of these modes has a few different speeds, usually providing 120 or 240 scan lines and varying degrees of horizontal resolution. (Actually some send 128 or 256 lines but the top 8 or 16 are always a fixed gray scale, leaving 120 or 240 usable lines.) In general, the trade-off is time vs. image quality: the modes with the best image quality require the most time.

The Robot modes have a much longer vertical sync (called VIS) containing 7 bits of information and a parity bit. This identifies the format of the following image so manual selection is not required on systems that recognize it. Everyone else has adopted the Robot VIS coding and assigned themselves unused codes in the original specification. Unfortunately, Scottie DX and one of the AVT modes use the same VIS code due to a lack of cooperation among developers.

The AVT mode is radically different from the rest. It has no horizontal sync at all; very accurate crystal oscillators are required to prevent slanted pictures. After 3 repetitions of the usual Robot VIS code, it has a digital header with 32 repetitions of the transmission mode, and a sequence number. It is only necessary to receive one of the 32 groups correctly to achieve synchronization. For more details see the AVT article in CQ-TV mentioned in the bibliography.

Frequencies

By convention, SSTV operation is generally found on only a few frequencies.

> 3.845
> 3.857
> 7.171
> 14.230
> 14.233
> 21.340
> 28.680
> 144.5

Nets

Two different Slow Scan nets meet on Saturdays at 15:00 and 18:00 UTC on 14.230 MHz.

Scan Converters

A scan converter is a device that converts images in one TV standard to another. In this case we interested in converting between SSTV (for transmission with voice radios) and NTSC/PAL so we can use Camcorders, TV monitors, etc. for creation and display of images.

A couple years ago anyone who was serious about SSTV had a Robot 1200C.

It is a complete system dedicated to SSTV. Just connect it to

- Color TV camera (either NTSC or PAL).

- Color TV set or monitor.

- Speaker and Mic connectors of a transceiver.

- Tape recorder for picture storage.

It has 4 black & white modes (one compatible with original 8 second) and 4 color modes with different transmission times and resolutions.

It displays images with 256 x 240 resolution with 18 bits per pixel. That's more than 250,000 colors.

> Robot Research
> 5636 Ruffin Road
> San Diego, CA 61927

It also has a parallel port for connection to a home computer. Several different programs for transferring images to/from the 1200C and for performing various other functions are available.

ART (Amiga Robot Terminal - for Amiga computer)
Tom Hibben KB9MC
Mule Hollow Road
Box 188
DeSoto, WI 54624
(608) 648 2033

GEST
Torontel
174 Bellamy Rd. N.
Scarborough, Ontario
Canada M1J 2L5
(905) 888 9054

or

Royal Electronics (Canada)
336 Goodram Drive
Burlington, Ontario
Canada L7L 2K1
(905) 637 9622

Hi-Res (for IBM PC)
Tom Jenkins N9AMR
5968 S. Keystone Ave.
Indianapolis, IN 46227
(317) 784 6118

Robot Helper
William Montgomery VE3EC
482 Townsend Ave.
Burlington, Ontario
Canada L7T 2B3
(416) 681 0509

SCAN
Bert Beyt W5ZR
301 Tampico St.
New Iberia, LA 70560
(318) 365 5263

Replacement PROMs are available to give the 1200C other transmission modes such as Wraase, Martin, Scottie, and AVT. PROMs available from:

Martin Emmerson G3OQD
6 Mount Hurst Rd.
Hayes, Bromley
Kent BR2 7QN England

See "SSTV with the Robot 1200C Scan Converter and the Martin Emmerson EPROM Version 4.0" in the July 1991 issue of 73 Amateur Radio Today for more details.

The 1200C was discontinued late 1992.

A 1200C equivalent is available:

DFM 1200 USA Scan Converter
Felipe Rojas AB4QC
3475 Shady Woods Circle
Lawrenceville, GA 30244

or

Donald Lucarell K8SQL
265 Outlook
Youngstown, OH 44504

or

Muneki Yamafuzi JF3GOH
2-3-2, Ohyodonaka Kitaku
Osaka 531
Japan
Semi-kits containing 3 PC boards and the hard to find components.

The newest scan converter is the SUPERSCAN 2001. It is similar to the Robot 1200C but a more modern design with several improvements. It can hold four 256 x 240 images with about 250,000 colors. New features include mouse support, titling without a computer, both parallel and serial interfaces, and a CMOS RAM with battery backup to save parameters.

Now available are:

- Semi-kit with 3 printed circuit boards, an EPROM developed by Martin Emmerson, and instructions.

- High stability crystal oscillator.

- Interface card for IBM PC.

- Packages of hard-to-find components.

The builder must gather up all the other components which go on the boards.

Jad Bashour
55 Hampton Road
London N15 3SX
England
Tel. 081 889 0486

Digital Signal Processing

Digital Signal Processing (DSP) could be the next major breakthrough in improving SSTV reception while maintaining compatibility with existing equipment. DSP uses an Analog to Digital (A/D) converter to sample the audio signal. After that it's all software.

DSP can simulate analog circuitry or do types of processing not even possible with the analog approach. DSP isn't magic and it doesn't guarantee superior performance. It all depends on the skill of the person writing the DSP software.

Wyman Research, a major manufacturer of FSTV equipment, showed a prototype system at the Dayton '93 SSTV Forum. We are all anxiously awaiting more information on progress.

Home Computers

Now that most home computers have plenty of memory and excellent color graphics, the most cost effective method is to use a computer with a suitable interface and software.

Note that if you want to send a picture of anything real, you will also need a frame grabber which will add a few hundred more $ to the total system cost.

Amiga

The AVT Master system was once very popular during for both SSTV and WEFAX. It is composed of an interface that attaches to the parallel port and software.

It has images with up to 4096 colors, all the popular transmission modes, builtin graphics editor, text generation, image processing techniques to clean up noisy pictures, and loads of other features.

It was discontinued Fall 1993 when AEA dropped all of its Amateur Television products.

IBM PC

When I first typed up this file, there was only a very crude B&W system available.

The situation has changed dramatically in the last year or two. There are now several PC-based color SSTV systems available.

Pasokon TV
Absolute Value Systems
115 Stedman St. # B
Chelmsford, MA 01824-1823
(508) 256 6907
See QST, January 1993 for details.

PC SSTV 5.0
Software Systems Consulting
150 Avenida Cabrillo, "C"
San Clemente, CA 92672

SSTV Explorer (Receive-only)
Radioware Corp.
P.O. Box 1478
Westford, MA 01886
(508) 452 5555
(800) 950 9273
Product review in QST, April 1994.

SSTV Information
Continued from page 7

ViewPort VGA (developed by KA2PYJ)
A & A Engineering
2521 West LaPalma, Unit K
Anaheim, CA 92801
Construction article in 73, August 1992.

All the systems have some kind of hardware interface (modem or just demodulator) and software that runs on the PC. All require a VGA display. But there the similarities end.

Interestingly, much different approaches were taken with the hardware. Pasokon TV uses an interface that fits into an expansion slot inside the computer. ViewPort VGA uses an external interface that connects to the printer port. PC SSTV and SSTV Explorer use small interfaces that plug into a serial port.

Software varies quite a bit in terms of SSTV modes implemented, support for super VGA cards with more than 256 simultaneous colors, ease of use, and other features.

HiRes 32 is a new version of the popular HiRes program. It is a paint program designed specifically for use with the PC-based SSTV systems. It has fancy text and a wide variety of special effects.

HiRes 32
Tom Jenkins N9AMR
5968 S. Keystone Ave.
Indianapolis, IN 46227
(317) 784 6118

Most of the recent growth of SSTV activity has been from the use of low cost interfaces and software on personal computers rather than expensive dedicated hardware. The next logical step is to use other common hardware which wasn't even intended for to be used for this purpose.

SLOW SCAN TV for the SOUND BLASTER
Gene Harlan WB9MMM
Harlan Technologies
5931 Alma Drive
Rockford, IL 61108
(815) 398 2683

As the name implies, it uses the popular Sound Blaster sound card from Creative Labs.

A demo version is available through Compuserve:

```
GO HAMNET
Library 6
SLOWSCAN.ZIP
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Multimode Systems

The MFJ-1278B, primarily intended for packet radio, RTTY, AMTOR, Morse code, etc. is also capable of SSTV with the optional MultiCom software.

MFJ Enterprises, Inc.
P.O. Box 494
Mississippi State, MS 39762
(601) 323 5869

The AEA DSP-2232 has DSP modem software for SSTV. I talked to someone in sales there about a month ago. They have no plans to complete the other half: the PC software to make the modem useful.

The BMK-MULTY is software for sending and receiving AMTOR, RTTY, WEFAX, SSTV, etc.

Schnedler Systems, AC4IW
25 Eastwood Rd.
P.O. Box 5964
Asheville, NC 28813
(704) 274 4646

Mac

Many people have asked many times and there doesn't seem to be anything available.

Others

There have been SSTV implementations for other machines such as the Radio Shack COCO and the Atari computers. (See Bibliography, below.) CQ-TV also mentions SSTV for machines we never heard of in the USA.

Free Software

There are several free SSTV programs available that will receive, and perhaps transmit, with very simple interfaces. Look around the ARRL BBS (phone (203) 666 0578 or e-mail to info@arrl.org), Internet archives (ftp to world.std.com, ftp.cs.buffalo.edu, oak.oakland.edu or other SimTel mirrors), or the ham radio sections of other on-line services or BBSs.

Look for file names resembling:

JVFAX??.ZIP
SLOWSCAN.ZIP
SSTVDEM?.ZIP
SSTVFAX2.ZIP
VESTER.ZIP

Naturally, these don't offer all the features of some of the commercial systems but they are a wonderful way to get a taste of SSTV with little or no cost.

Publications

Modern information on SSTV is very scarce. The only recent handbook is:

Slow Scan Television Explained
by Mike Wooding G6IQM

(available from BATC) The only other SSTV handbook, that I know about, was written by Don Miller W9NTP and Ralph Taggart WB8DQT about 20 years ago.

There is a good SSTV overview in the January 93 issue of QST.

There are a few magazines that specialize in Amateur Television. These are mostly oriented toward fast scan TV but SSTV and WEFAX are mentioned occasionally.

(Regular column on 'Satellites, Facsimile & Slow-Scan TV Imaging' by Fred Sharp W8ASF)

The SPEC-COM Journal
P.O. Box 1002
Dubuque, IA 52004-1002

(Frequent column 'SSTV Revisited' by Roland Humphries G4UKL)

CQ-TV
British Amateur Television Club
Dave Lawton G0ANO
Greenhurst, Pinewood Road
High Wycombe, Bucks HP12 4DD
England

Amateur Television Quarterly
1545 Lee St.
Suite 73
Des Plaines, IL 60018

Amateur TV Today!
QCD Publications
1492 Highway 30
Tipton, IA 52216-9335

Booklets of old ATVQ and A5 articles are available from:

APRS (Automatic Packet Reporting System)

APRS is software/shareware program which is a MAP based packet system to display the positions and movements of all stations in a packet network. Any station may place an object (Sta, BOAT, car, plane, rptr, hwy, bridge), on his map and all stations in the network will see the same object on their maps. The system also tracks the movements of any GPS or LORAN equipped packet station. See the July/August P92/11 issue of QST.

APRS replaces text communication with visual object on maps. All APRS stations see a color map on their display which shows the location of all stations on frequency.

Any station can place an object on his screen and all stations will see the object. They will also see it move as time progresses, if a moving vehicle. Thus APRS is a tactical communication tool for instantaneously distributing information about the changing tactical situation.

Good examples are Aircraft, BOAT's, Auto's, Hurricanes and storm tracking, weather reporting, race and vehicle tracking, VIP tracking during special service events, parades, DX spotting and RV/Boat tracking, Satellite DX and so forth. DF (Direction Finding by LAT/LONG for lost units/planes/xmtrs, and JAMMERS.)

Any station can interface a GPS or LORAN to his COM2 port and this position will automatically be transmitted to the net as he moves. Small tracking devices the size of a cigar box, using a GPS receiver, TNC and HT can be assembled for tracking important objects in special events!. APRS decodes the NMEA-0183 serial protocol data available from all GPS/LORAN devices.

Maps can be any scale from the whole US down to 0.25 miles and objects can be placed globally to within 60 feet. Broadcast and operator messages are also supported without leaving the map screen. Any packet station can be plotted if they simply place their LAT/LONG in their BText in the following for-mat:APRS now has an optional automatic interface to ANY multi-LED DOPPLER DF to plot instantaneous Bearing lines on all APRS station maps. The interface was designed by N7LUE in AZ and only uses a few chips.

We want to build a nation wide packet tracking network on both VHF and HF. Try using 7085KHz and 10151KHz LSB and listen for APRS packets.

Currently using 145.010 VHF in Bay area,as the "WIDE" DIGIPEATER FOR APRS and RACES/ARES USE.

APRS copywrite by WB4APR @ WB3V.MD.USA....

Mr. Bob Bruninga /WB4APR
115 Old Farm Court.
Glen Burnie, MD 21060

QST Jul/Aug p92/11...Look for "APRS @ ALLUS" messages on your BBS's....

73's
Bill

SSTV Information

Continued from page 7

ESF Copy Service
4011 Clearview Dr.
Cedar Falls, IA 50613

A newsletter devoted to SSTV:

VISION
International Visual Communications
Association (IVCA)
P.O. Box 140336
Nashville, TN 37214

Bibliography

I've purposely excluded the scores of articles describing modifications to the Robot 400 (an early Black & White only system) because they're all in the booklets from ESF and of little interest to someone without a Robot 400.

Abrams, Clay K6AEP & Taggart, Ralph WB8DQT, "Color Computer SSTV", 73, Nov-Dec 84.

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Goodman, Dick WA3USG, "SSTV with the Robot 1200C Scan Converter and the Martin Emmerson EPROM Version 4.0", 73 Amateur Radio Today, Jul 91, p. 46.

Langner, John WB2OSZ, "Color SSTV for the Atari ST", 73 Amateur Radio, Dec 89, p. 38, Jan 90, p. 41.

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Montalbano, John KA2PYJ, "The View-Port VGA Color SSTV System", 73, Aug 92, p. 8.

Pagel, Paul N1FB, "Radioware SSTV Explorer" (product review), QST, Apr 94, p. 80.

Schick, Martin K. KA4IWG, "Color SSTV and the Atari Computer", QST, Aug 85.

Taggart, Dr. Ralph E. WB8DQT, "The Romscanner", QST, Mar. 86, p. 21.

Vester, Ben K3BC, "An Inexpensive SSTV System", QST, Jan. 94, p. 27.

Conclusion

Most hams are scared away from trying SSTV because they still think it HAS TO be expensive. That WAS true but it's not anymore. SSTV activity has exploded in the last year with the introduction of low cost IBM PC-based SSTV systems.

The History of Packet Radio on the West Coast

(Editors's note: I thought we should "Look Back" and see how far we've come in this Packet Radio game! This is so we can get ready to launch Packet Radio and other Digital Modes into the 21st century.

Here's a compilation of the History of Packet on the West Coast, mostly from Don NI6A, but also from the memories of WB6ASR and WB6YMH. -Mike)

NTS and PACKET: A Short History

A while ago, an NTS operator in Vacaville asked for comments addressing the problem of NTS packet message reliability and proposed some solutions in a bulletin. After reading his bulletin, it seemed obvious a history of NTS/Packet would be helpful in order to go forward with expedient solutions.

Packet is full of old timers, newcomers, experimenters, appliance operators, software experts, hardware hounds, analog types, digital buffs, rf types, repeater experts, emergency operators, traffic hounds, bulletin addicts, networking specialists, ragchewers, dx fadists, satellite enthusiasts, etc . What holds us all together is that we all want to pass digital data faster and accurately in order to serve our own purpose. For some this task is a challenge or a chore, fun or boring. If we pool our resources in a cooperative spirit we will succeed.

To understand where we are (in California packet) in a functional manner and where we are headed, it will be helpful to look at the evolution of packet not just in this State but on the North American Continent as a whole. Two lessons we learned after over seven years of packeting are:

a) The "technical" development enhances the "functional" aspect. Just like "Research and Development" and "Operations" are two symbiotic partners within a viable organization, so to are these two aspects of packet essential in accomplishing the tasks of the future.

b) Packet networking, almost by definition, is a cooperative venture involving diverse people in diverse geographical areas needing to communicate, speaking a mutually understandable language at a compatible speed, using the same protocols (or capable of making translations) and on frequencies that are obtainable, non-interfering, and expedient in order to succeed. Amateur packet, being a unique volunteer endeavor, with many diverse interests and networking philosophies, requires "team players" (those who are willing to focus on the goal regardless of personal prejudices). These types have been the greatest benefit, and, unfortunately, one of the rarest. At various times in the history of packet development, packeteers with "people" skills have been put on the endangered species list quite often. *(EDITOR's NOTE: All that notwithstanding, it takes ALL TYPES to build excellent amateur packet networks!)*

Since we all have to packet in a "NETWORK" let take a look at it inside and out.

The North American Packet Beginning: 1978-1984

California was relatively late in being linked Statewide via digipeaters and bbs forwarding. It was relatively late being linked nationally via HF/VHF GateWay BBS. It seemed that the East Coast was consistently one year ahead of us. The West Coast however was not always behind the rest of the USA. Not only was NET/ROM born on the west Coast (W6IXU and WA8DED) but the first digipeater was built by KA6M at Palo Alto, the first TNC by VE7APU in Vancouver, B.C., and the famous TAPR TNC 1 AX.25 proms were written by NK6K in Southern California *(EDITOR'S NOTE: NK6K now lives in Pittsburgh, PA).*

The dawn of Amateur Packet Switching radio began in 1979 with the Vancouver Whiz Kids at VADCG (Vancouver Amateur Digital Communications Club). It was in early 1980 that VE7APU, Doug Lockhart designed the first TNC. Packet became a legal mode for amateur operation in Canada in 1978. By 1980, VADCG made available a PCB board and some hard to find chips for the adventuresome experimenter and soon "Vancouver Boards" sprouted coast to coast and into the USA as well.

It took a lot of "noise" aimed at the FCC by some notorious amateur "noise makers" before Packet became a legal mode in the USA in 1980. Before this, amateur digital communications were limited to CW and BAUDOT (both recognized international codes).

Soon afterwards, KA6M, Hank Magnuski, then located in Menlo Park, California built the world's first digipeater in 1980 with a home-built TNC.

The first ARRL Networking Conference was organized by AMRAD in October 1981 and held at the National Bureau of Standards in Gaithersburg, Maryland.

In mid-1982 Tom Clark, W3IWI created a working meeting of active packet radio groups nationwide to agree on a common protocol as the original Vancouver protocol was being opposed by many who supported a new protocol called AX.25 based on the commercially used CCITT X.25 protocol. Most people were working with either homemade TNCs running on a S-100 bus or modified Vancouver boards. AMRAD (Amateur Radio Research and Development Corporation) was selling daughter boards for the Vancouver boards to enable many of these enhancements including digipeating.

It was eventually agreed that the Vancouver protocol was to be superseded in most of the USA by the new AX.25 protocol modeled after the commercial CCITT X.25 specifications. This protocol eliminated the 16 callsign limitation and contained many other features. Much credit must be given to AMRAD and to Terry Fox, WB4JFI, in particular for AMRAD's early work in providing software/hardware support for most of the early modifications of the Vancouver TNC's to AX.25 machines. Much credit is due to many others who trouble-shot and lent their criticism such as Eric Scace K3NA, Phil Karn KA9Q, Paul Rinaldo W4RI, Gordon Beaty N2DSY, and Doug Lockhart VE7APU, many of whom, though severe critics of AX.25, helped immeasurably in its refinement.

By October of 1982, Harold Price had a working version of ax.25 software

functioning in a TAPR alpha test TNC while KA6M had ported the same for a VADCG TNC.

Then a hot-bed of packet radio activity, the PPRS (Pacific Packet Radio Society) founded by KA6M, hosted the 2nd ARRL Computer Networking Conference in March of 1983. It was on this trip and subsequent trips to California that Lyle Johnson, WA7GXD, was able to formulate ideas for the revolutionary TAPR TNC 1 kit that he planned to make available to the average ham. Previously, one had to be an adventurous experimenter to get on packet (both hardware- and software-wise) and packet was far out of the reach of the average ham. (PPRS also sponsored the 4th Computer Conference held in San Francisco on March 30, 1985 and also hosted the second and last WestNet Conference on the same date.) *[EDITOR's NOTE: PPRS is actually still in existence, and meets at the Ampex cafeteria in Redwood City on the 2nd Wednesday of every month; contact VE3FZK@N0ARY for more info.]*

The first WestNet meeting occurred a few months later in July of 1983, at NK6K's house in Southern California attended by KA6M, K6VCO, WB6YMH, NK6K, WA6RWN, etc. It was there that plans were made to link San Francisco with Los Angeles using high level digipeaters, a feat that was not to occur until early 1985, and then, accomplished by relative newcomers to the packet community (the W6AMT group). At this meeting was born the proposal to allow up to 8 digipeater callsigns in an AX.25 linkup. This proposal was eventually accepted by the AX.25 protocol committee and incorporated in AX.25 protocol and the TNC 1 software which was shortly to emerge on a grand scale.

It was not until the dynamic gang at TAPR (Tucson Amateur Packet Radio) in late 1983 made available the first of the TAPR TNC1 kits that we saw a significant shift in packet activity away from the experimental and into the "functional" and "user" arena. This dynamic team of TAPR developers was headed by Lyle Johnson, WA7GXD and a group of extraordinary "helpers" such as Den Connors KD2S, Dan and Margaret Morrison KV7B and KV7D, Eric Gustafson N7CL, Paul Newland AD7I, Pistol

"Pete" Eaton WB9FLW, Harold Price NK6K, and Tom Clark W3IWI of AMSAT. By early 1984, TAPR TNC (the "TNC 1") kits were in full production (well, almost) and packet operation was increased 20 fold in a few months across North America.

By early 1984, EastNet was born with links on the East Coast from New England to the Mid Atlantic states mainly thanks to the coordinated efforts of NEPRA (New England Packet Radio Association). Experimentation was being run on 10 MHz HF packet at 300 Baud and 200 Hz shift (Bell 103 tones). The ARRL Ad Hoc Digital Communications Committee agreed to encourage packet development using surplus Xerox 820-1 computers as an inexpensive and widely available development tool. By mid-1984 Hank Ordneson W0RLI had operational software for a Xerox 820-1 packet radio BBS using a TAPR TNC. By July W0RLI was running on HF and linked to other HF BBS across the U.S. Suddenly, packet communities across the USA were linked via packet BBS operating on VHF and HF networks via W0RLI Xerox 820-1 amateur radio BBS by August of 1984. *(W0RLI now lives in Oregon.)*

However, the West Coast somehow had fallen into a packet depression and was now about a year behind the East Coast (unless we consider Tucson to be on the west coast). California had not a single link within the state and no HF GateWays and would not have any for quite some time. Even though NTS traffic was being handled up and down the East Coast helping overcome one of the worse sunspot lows in history, NTS traffic will not start to be handled via automatic forwarding in the West until W6IXU BBS activated its NTS function in early 1985.

California Packeting, pre-1985 (as told by WB6YMH)

The South's Beginnings

The first activity in Southern California was by WA6JPR early in 1982, followed by WB6YMH with a Vancouver board and NK6K and KD4NL with S-100 bus systems running 6809 microprocessors and wire wrapped HDLC controllers. WB6UUT converted his

RTTY mailbox to become Southern California's first packet mailbox, followed a short time later by the WB6YMH remote CP/M system as a file server which has evolved into California's oldest extant BBS, WB6YMH-2. N6BGW-9 BBS appeared also during this time while WB6UUT closed his BBS. WA6OZJ-1 located high at 500 feet in Palos Verdes was the LA area's first effective high level digipeater which eventually was to link to W6SE in San Diego and K6OYY near Santa Barbara.

In the LA area much of the activity became centered around WB6YMH-2 BBS on 145.36. Activity was so low that Skip had to put games to execute on his BBS to keep up interest. There was activity also in San Diego, Fresno, Visalia, and Sacramento areas, but no high level digipeaters or linking between areas. Most of the activity (except for the BBS operations) was experimental/technical in nature and no significant activity emerged until after the TAPR 1 Beta Kit releases in early 1984.

In Southern California, most activity was centered around WB6YMH-2 BBS on 145.36. There was activity also in San Diego, Fresno, Visalia, and Sacramento areas but no high level digipeaters or linking between areas. Most of the activity (except for the BBS operations) were experimental/technical in nature.

In SOCAL, WB6YMH-2 is the oldest BBS still on the air, and was the second BBS in Southern California. The first BBS was WB6UUT, who had been running a mailbox on RTTY and converted it to packet a few months before WB6YMH came on line. When I first fired up I was a "rcp/m" (Remote CP/M) system only (files only, no bbs), I believe N6BGW was on with WB6UUT software before I got the BBS program running on the "file server".

The first digipeater was probably WA6OZJ if you count digi's at a home location at a good site. Jim lived in Palos Verdes and was very widely used for several years. I don't know what the first dedicated digi was. The first person on packet in L.A. was Wally, WA6JPR, who beaconed for over 6 months before the

The History of Packet Radio on the West Coast

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first person copied his beacon. I was the second person on ... with a vancouver board given to me by WA6JPR. Harold NK6K and KD4NL were the third and forth people on, both with homebrew wirewrapped HDLC controllers in their computers. (S-100 and 6809 based).

It's probably impossible to say when the first "link" to San Diego was done since it's fairly easy to talk to San Diego from L.A. direct. WA6OZJ talked to his brother in San Diego almost from the start.

Central California, Pre-1985

Greg, WA6RWN, from in the Visalia area was anxious to help the long desired North/South link while establishing an early solar powered digipeater at 9000 feet elevation for the Fresno/Visalia area as early as 1984.

NORCAL and WESTNET

As noted previously, KA6M and PPRS was a huge force in the early days of packet technical development. However California fell quite behind the rest of the USA in regard to linking by mid-1984.

Throughout 1982-1984 Northern California activity was centered around KA6M-1 BBS and KA6M-2, the worlds's first digipeater, located at 700'above Palo Alto (first located at 700' in the Oakland Hills). When KA6M-2 moved to the Hills over Palo Alto, K6VCO-2 digipeater took its place in Oakland. KA6M-1 was a Data General Computer with packet BBS software. This early Northern California packet activity was on 146.58 MHz.

The KA6M-1 BBS carried UUCP ham conference mail, served as a local BBS message center, carried AMSAT news and the ARRL GateWay Magazine when it first came out in August 1984. But foremost KA6M-1 carried the infamous EIS DRNET (Digital Radio Net Conference) where all the "Big" news of packet was being "made." Thanks to N2DSY at EIS in New Jersey, the conferencing concerning packet develop-

ment could be witnessed nightly by any packet user in the Bay Area.

Most activity during these years was centered around the KA6M-1 BBS in Northern California although there were a few number of ragchewers. Even though the first WestNet conference in July of 1983 at NK6K's QTH in Southern California laid ambitious plans to link the State but it took WB6ASR and WA6RAL in January of 1985 to put up Northern California's first high level digipeater at 3600' on Crystal Peak, W6AMT. George and Greg followed this feat about a month later with W6AMT-1 on Williams Hill. Both were on what was then a virtually "dead" and unused packet frequency in Northern California, 145.01.

Most agree the turning point came in early 1984 when the TAPR TNC1 kit came out in quantity and proved that "off the shelf" technology was the deciding "development" booster that was needed. Previously one had to be very adroit technically to put together and hold together a Vancouver "board" TNC. 1985 proved to be a very decisive year for packet growth indeed as quite a few commercial vendors offered TAPR kits and later assembled and tested TNCs for sale.

1985 Packeting!

By a series of coincidences, W6IXU at Arroyo Grande was working with WB6DAO above Santa Barbara via a 440 MHz full duplex voice repeater (N6ZF 443.875/448.875 on Broadcast Peak sponsored by SBCRA) to allow Mike to link with the newly installed K6TZ-1 digipeater on 145.36 at Isla Vista west of Santa Barbara on the weekend of February 2, 1985, trying to get an over-water link to the Los Angeles basin on 145.36 to WA6OZJ-1 digipeater at 1500 feet in Palos Verdes. That day, W6IXU in Arroyo Grande heard W6AMT-1 on Williams Hill and was able to link into the Bay Area via W6AMT-1 and w6AMT. Mike then crossed the audio I/Os of his 145.01 MHz and 440 MHz radios and sent out the signals to WA6DAO who crossed the

audio at his station between his 440 MHz FM transceiver and his 145.36 MHz transceiver connected to his TNC 1. WB6DAO had a path to K6TZ-1 digipeater at Isla Vista which in turn had a good path into WA64OZJ-1 at Palos Verdes. There was also a good over-the-water link from K6TZ-1 to W6SE in San Diego and thus the first link from North of San Francisco via W6AMT to San Diego was finally established in that fateful weekend of January 1985.

Both W6IXU and I were surprised to find each other talking on packet that weekend, as we had talked may times before, handling NTS traffic using high speed CW on RN6 and PAN. We both reaffirmed our dedication in getting packet to work for NTS, and Mike launched his plans for a BBS that could be accessed via both Northern California and Southern California packeteers as a NTS clearinghouse BBS.

Within a few weeks Mike had a BBS going on 145.01 and had implemented NTS help files and functions allowing the killing of third party traffic. NTS operators from SCN and SCN/SB (Southern California Net and SCN/Santa Barbara) were picking up Southern California traffic and operators from Northern California Net (NCN) checked in for Northern California traffic. Out of State traffic was picked up by liaison stations to the Sixth Region Net. This system lasted for North/South traffic flow until Spring 1986 when KE6BX BBS first joined the Northern California linked BBS organization to the linked Arizona and Southern California BBS systems.

W6AMT was installed 1/26/85. It was the first 145.01 digi in California. W6AMT-1 was installed 2/2/85. This completed the link to Southern California. I worked WB6FSK on 2/2/85 via W6AMT, W6AMT-1, W6IXU, WB6DAO, K6TZ.

The digi was W6AMT until 3/9/87 when net/rom was installed and it was changed to AMT-10 and dualported to W6AMT (which had been running net/rom).

W6AMT-11 on 223.58 was installed (with net/rom) on 2/21/87 and dualported to W6AMT-1. This opened up the first BBS backbone in the west. Forwarding to IXU was now done by Bay Area BBSs from 223.58 via AMT, AMT-11, AMT-1.

The wormhole was first installed on 145.01 around 1/7/87. It wasn't using net/rom at first. It was just an audio connection from VitaLink in Mountain View to UMD (University of Maryland) in Maryland via 56KB satellite link. The first packet contact was made by K6OJM to WA3YMH. OJM was at the Mountain View site and YMH at the UMD site. On 1/7/87 WB6ASR worked WA3YMH for the first over the air wormhole contact on 145.01. Path was via W6AMT, WA3YMH-1.

Here are some of the elevations of the popular nodes:

St. John - 6750
Crystal Peak - 3600
Williams Hill - 2800
Santa Ynez (AMT-2) - 4000
Palos Verdes (AMT-3) - 1500
Aan Diego (AMT-4) - 2565

Later AMT-5 was added on Santiago Peak - 5696

At one time there were 10 AMT nodes (North to Sound) AMT-7, AMT-0/-10, AMT-1/-11, AMT-2/-12, AMT-3, AMT-5, AMT-4.

AMT-7 later became WA6RDH and was lost in the fire at SJ. AMT-2 became WB6DAO-2. It was later taken off the air when low level node was established in Santa Barbara. AMT-3 became WA8DED-3. Now QRT. AMT-4 became AA4CD-1...still on the air. AMT-5 when QRT.

The west end of the wormhole was initially under the same call as the east end: WA3YMH-1. This was because the audio from the Bay Area was tied to the TNC on the east coast with local east coast audio. The system was converted over to a dual port net rom node operating at 9600 baud. Then the west coast end was under the call WB6FFC-1. Mike, WB6FFC, along with Brian, K6OYM,

were the two at VitaLink who were responsible for the wormhole. All of this work was done at VitaLink's facilities in Mountain View. Later VitaLink moved to Fremont and the wormhole moved with it. By this time the west end had already been moved from 145.01 to 223.58.

But between the Spring of 1985 and Spring of 1986 a lot more happened on other frequencies other than on 145.01 MHz. KA6M-1 BBS was going through it's death throes by the time the 4th Annual ARRL Computer Networking Conference came to San Francisco sponsored by PPRS. Northern California's second BBS had just been born at the Palo Alto Red Cross through the efforts of N6FQR, Bill Danielson and Ted Harris, N6IIU. The callsign was WB5VUL and the frequency was 145.09 MHz. Although there was no digipeater on this frequency and the BBS was down more than up, the need for a working Northern California BBS was more obvious than ever. With the help of N6FQR, the East Bay Packet Radio Association in conjunction with the East Bay Amateur Radio Club and the Richmond Red Cross, W6CUS-1 BBS was placed into service on 145.09 MHz in the Summer of 1985. The following week, EBPRA put up WD6CMU-1 digipeater on 145.09 MHz at 1000 ft in the Berkeley Hills that linked San Jose to Santa Rosa to a single BBS. UUCP, HamNet, DRNET, and other electronic news services were uploaded to W6CUS-1 and then the HF GateWay second port was added late that same summer finally providing a link to the national packet radio system via its 14.103 MHz port. Now Northern California was only 1 year behind the East Coast and gaining!

Within a month, WA6NWE-1 BBS joined the link from Sacramento using a Xerox 820-1 BBS as well and an ingenious digipeater link via N6IJP-1 (the world's first wandering digipeater). WA5VUL moved to 145.07 MHz but via an ingenious control system engineered by N6FQR, it came onto 145.09 MHz between midnight and 6 AM to forward with W6CUS-1. By the end of the year,

AA4RE-1, began experimenting with the beta test release of WA7MBL's IBM emulation of W0RLI's Xerox 820 BBS software. Roy joined into the link via WB6ZVW digipeater and Northern California was suddenly linked for automatic message forwarding from Sacramento to Gilroy on VHF and nationally via the HF GateWay at W6CUS-1. NTS traffic was now being forwarded nationally in and out of the State. Southern California bound traffic was taken from W6CUS-1 manually by assigned NTS liaison stations to W6IXU BBS on 145.01 and dumped. SCN stations then checked W6IXU daily for SCN traffic and dumped their NCN bound traffic.

A similar situation was occurring in Southern California with KD6SQ-1 BBS acting as the HF/VHF GateWay BBS there with the forwarding occurring mostly on 145.36. By September 1985, the Northern California Sysop Association was formed at a meeting at the Richmond Red Cross attended by every packet BBS sysop in Northern California from Clovis to Sacramento. Input was received from KD6SQ and W6IXU (from Southern California) as well. Plans were made for automatic forwarding designators, bulletin distribution, new digipeater links, backbone linking, high speed modem development, emergency communications uses, NTS traffic, etc.

It was not until KE6BX "Gateway" 145.01 and 145.09 in April 1986 did automatic forwarding with Southern California and Arizona become a reality. This was done first with WB7BNI BBS, KR5S BBS, N5EDH BBS, and N6LUC (later replaced by NK6K bbs). Within a month W6IXU modified his software to be able to forward with the W0RLI forwarding system on 145.01 MHz. In order to keep loading reduced, forwarding was restricted to 1 AM to 5 AM. It was not until early winter of 1987 for the 2nd Sysop meeting at the Richmond Red Cross that there was decided to take all BBS off of 145.01 MHz and do the forwarding on 223.58 MHz backbone.

(TO BE CONTINUED)

EOF

CONSTITUTION OF THE
NORTHERN CALIFORNIA PACKET ASSOCIATION

This document shall serve as the CONSTITUTION and BYLAWS of the Northern California Packet Association, and may be referred to as either.

ARTICLE I
Purpose

The Northern California Packet Association is an educational, research, and public service organization. The purpose of the Association is to foster the development of digital Amateur Radio communications in Northern California. This field is occupied foremost by individual Amateurs who, individually and in groups, make efforts to research, design, test, construct, operate, and use digital systems. These individuals and groups also make efforts to recruit and educate others in the field. All of these efforts can benefit from planning and coordination, and it is the purpose of the Association to provide the forum for such to take place. To achieve these goals the Association is organized to function as a working group, rather than as a social organization, and it shall, among other things, strive to do the following:

1. Improve the state of the art in the field of digital communications via Amateur Radio.

2. Encourage and educate interested persons and groups in the area of digital communications via Amateur Radio.

3. Encourage the construction, operation, and expansion of local, regional, national, and worldwide communications systems using digital methods via Amateur Radio.

4. Encourage the development of new and diverse methods of digital communications.

5. Bring together a cross-section of all the diverse interests in the field of Amateur Radio digital communications so all will have a voice and the opportunity to offer their knowledge, experience, talents, and goals to the benefit of the digital community.

6. Select frequencies for digital use, working with users and coordination groups for non-digital modes, with an aim to maximize the ability of the Amateur Radio Service to accomplish its purposes as set out in Federal Regulations.

7. Coordinate use of digital frequencies so that the goals of the digital community are best facilitated.

8. Represent the interests of the Northern California digital community in its contacts with others, such as regulatory bodies, coordination groups for non-digital modes, and digital coordination groups serving other geographical areas.

9. Perform all these activities in Northern California, plus in any contiguous areas if the digital users in those areas and the Association should so decide.

ARTICLE II
Members

A. Any individual or bona fide Amateur Radio club interested in the coordination of digital communications may become a Member upon making application and paying the dues. Memberships run from the time of joining until the same date the following year. Memberships automatically expire unless renewal dues are submitted. Membership may be denied or revoked for cause. "Cause" is defined as conduct by the Member inimical to the Association's interest, and shall include, among other things, the inability to work with others in carrying out the Association's purposes.

B. Each bona fide Amateur Radio club which joins the Association shall designate a person to act as their representative. A club may also designate an alternate to serve if its representative is absent. Such designations shall become effective when the Secretary is notified of them by the club, and they shall remain in effect until he is notified otherwise.

C. Each individual Member and each representative (or alternate) of each club which is a Member shall have one vote at General Meetings of the Association.

D. All records of the Association shall be open to the inspection of any Member, and any Member shall have the right to timely copies of such records at cost and in any reasonable format requested. Only information in the nature of access codes may be withheld from such a request.

E. Lists of names of Members, as well as other information provided by the Association from its records, shall be used only for internal matters concerning the Association or the digital community it serves. Such lists shall not be used for solicitation, by other associations, for publication, or for commercial purposes of any kind. The Board may in writing waive these restrictions in circumstances where they deem it appropriate.

F. Members may band together to form Special Interest Groups in cases where they share an interest in a specific aspect of digital communications. They may select individuals to represent their group before the Board and thereby achieve greater participation in the Association's activities. Such representatives shall not become voting members of the Board because of that status, but the Board shall make an effort to obtain and weigh their opinion before making decisions concerning the interests of the group.

ARTICLE III
Board of Directors

A. The Association shall be run by a **Board of Directors** (Board) which shall each year originally consist of seven individuals elected at the April General Meeting to serve for one year beginning May 1. The Board may at any time elect additional individuals to the Board in order to achieve a Board reflecting the diversity of interests in the digital community; however the maximum size of the Board shall be eleven members. These additional Board members shall, upon their election, have equal standing with the electing members and they shall have terms of office to expire at the same time as those of the electing Board. Each Board member must be an individual Member of the Association.

B. The Board shall manage the Association, and it shall perform other duties attributed to it by custom or law.

C. Board meetings shall be held in Northern California unless all Board members agree otherwise. Board meetings may be called by any three Board members. To have a Board

meeting, each Board member must have been notified of it or have waived the right to notice. Notice may be put in the mail, sent digitally, or phoned to each Board member at least 4 days before the meeting, or publication in the newsletter will suffice. Half of the Board members constitute a quorum to do business.

D. A majority of those voting on any matter is required for it to pass. *Exception*: An affirmative vote of two-thirds of the Board members is required to remove a Board member from that body or revoke a membership in the Association.

ARTICLE IV
Officers

A. Officers shall be appointed by the Board. Officers need not be Members of the Association, nor must they be members of the Board. The Officers shall carry out the day-to-day management of the affairs of the Association in accordance with direction given them by the Board.

B. The Association shall have five Officers with duties as follows:

1. The **President** shall run Association meetings. His primary function is to coordinate. He shall strive to get other people to do as much as possible and thus increase involvement by others.

2. The **Vice President** shall assist the President, and shall perform the President's work if the President is absent.

3. The **Secretary** shall keep the Association's records, except financial and property records. He shall keep minutes of meetings and issue Association correspondence.

4. The **Treasurer** shall handle the Association's money. He shall make reports on the Association's financial condition as needed. He shall keep an inventory of any materials owned by, or on loan to the Association.

5. The **Newsletter Editor** shall produce the Association's newsletter. The newsletter shall be sent to all Members of the Association, all Board members, all Officers, and all Appointees. It may be sent to others at the Editor's discretion. All notices of General Meetings and minutes of all General and Board Meetings shall be published in the newsletter. Newsletters giving notice of a General Meeting must be placed in the mail thirty days before the Meeting.

C. In addition to the duties specifically listed, each Officer shall have the duties attributed to his office by custom or law.

D. The Board may designate individuals or committees to assist in specific duties (**Appointees**). Technical committees, frequency coordinators, and the like are examples. The Board shall specify the extent of the authority of such Appointees in the motion appointing them.

E. Officers and Appointees serve at the pleasure of the Board, and the Board may remove such persons from their positions and/or redefine their authority at any time. The term of office of Officers and Appointees terminates on April 30 of each year.

ARTICLE V
General Meetings

A. A GENERAL MEETING shall be held, as far as practical, every April. Additional General Meetings may be held during the year upon being called by the Board, or upon petition of the members per paragraph C of this article. General Meetings shall always be in Northern California. General Meetings shall be held only on Saturdays or Sun-

days, with a starting time no earlier than 10 a.m. The purpose of General Meetings is to provide a line of communications between the Board and Officers on one hand and the Members and members of the public on the other.

B. The final power in the Association rests with its Members; a vote by the Members prevails over a vote by the Board if they conflict. Any Member may bring any action up for a vote, but only if notice of the topic to be voted on has been published in the newsletter. The Editor shall include any notices of this type submitted to him by a Member.

C. Any fifteen Members may submit to the Secretary a petition calling a General Meeting. The petition shall state the date (at least 33 days hence), time, place, and topics to be discussed. The petitioners shall then within three days place a copy of the petition in the mail to all usual recipients of the newsletter. If the Secretary's office is vacant or he cannot be located in Northern California, delivery of the petition to another Officer or a Board Member shall suffice.

D. Items of business may be brought before a General Meeting by the Board of Directors without prior notice in the newsletter, but such notice is always required for actions at a General Meeting to amend this Constitution, to remove a Board member, or to revoke a membership in the Association.

E. Fifteen percent of the Members, but at least ten in number, must be present at a General Meeting to constitute a quorum, and a majority of those voting on a measure is required for it to pass. *Exception*: Two-thirds of those voting is needed to amend this Constitution, remove a Board member, or revoke a membership in the Association.

ARTICLE VI
Required Notice

If action to remove a Board member or revoke a membership in the Association is to occur, written notice must be put in the mail to the affected party at least 15 days beforehand, so that he can have his say at the General or Board Meeting where the vote is to be taken. Temporary actions of this type may be taken without notice in an emergency, but no final action may be taken without it.

ARTICLE VII
Amendments

Amendments may be made to this Constitution only by the Members (not by the Board of Directors). Proposed Amendments shall be set out in full in the newsletter preceding the General Meeting at which the vote is to be taken. The newsletter shall be put in the mail by first class mail to all Members at least thirty days before such meeting.

ARTICLE VIII
Implementation

This Constitution shall become effective on an interim basis, until the next General Meeting, when approved by the Board. It shall be submitted to the membership for approval at the next General Meeting, and it shall become effective upon their approval.

Ratified by vote of the general membership,
February 4, 1990

Ammended May 3, 1992

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	Keyboard to Keyboard
145.03	Keyboard to Keyboard
145.05	Keyboard to Keyboard
145.07	LAN
145.09	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

220 MHz

223.54	Node uplink (East Bay)
223.56	Node uplink (West Bay)
223.58	Node uplink ("Other")[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/North 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	All

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

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. Some existing BBS systems (eg. WA6RDH) were grandfathered.

A gray area is "Personal BBS." A PBBS is one with a small number of users (rule-of-thumb: five or less). A PBBS should not be attracting general users thru beacons, etc. Bulletins should be confined to local information and not duplicate the general bulletins send to the community. That's the job of a full service BBS and we have lots of them in Northern California to use.

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.

Where to Find a BBS

N0ARY-1	Sunnyvale	144.93, 433.37
KE6BX	Hollister	144.93
KJ6FY-1	Benicia	144.93
N6VET	Brentwood	144.93
KI6YK	Danville	144.93
WD6CMU	Richmond	144.97
N6EEG	Berkeley	144.97
WA6EWV-1	S. Lake Tahoe	144.97
KD6JZZ-2	Sonora	144.97
K6LY	Monterey	144.97
N6LDL	Los Gatos	144.97, 145.71[1]
AA4RE-1	Gilroy	144.99
KA6FUB	Martinez	144.99, 441.50
KD6RKP	Brookdale	144.99
KE6LW-1	Yuba City	145.99, 441.50
W6PW-3	San Francisco	144.99
W6SF	Stockton	144.99
WA6RDH	Dixon	145.01, 441.50
KG6EE	Santa Cruz	145.07
KI6EH	Santa Cruz	145.07
KA6EYH-2	Pacifica	145.07
N6IIU-1	Palo Alto	145.07, 223.68
KM6PX-1	Carmichael	145.07, 441.50
KK6WD	Redding	145.09
N6IYA-2	Felton	145.09, 441.50
KD6EUK	Felton	145.09, 441.50
KB6AML	Concord	145.09, 441.50
K3MC	Fremont	145.75[2]
WA6NWE-1	North Highlands	145.09, 441.50, 144.93[2]
WA6YHJ-1	Livermore	145.09
WX3K	Rohnert Park	145.73
W2AIR	Two Rock	441.50, 1299.87
W8GEC	Boulder Creek	145.73
WA6HAM	Pittsburg	145.73
KA6JLT-2	Menlo Park	145.73, 145.71[1]
KC6PJW	Cotati	145.73
AA6QR	Orinda	145.73
W6CUS-1	Richmond	145.79
N6MPW	Ben Lomond	144.79
N6QMY-1	Fremont	145.79, 441.50
KD6XZ-1	Sacramento	145.79, 441.50
K7WWA	Willits	145.79
KK6H-1	Point Reyes Stn.	145.79

[1] 9600 baud port
[2] TCP/IP port

NCPA Board Meeting Minutes

Jeri Bissell, N7YYG
NCPA Secretary

The NCPA Board of Directors meeting took place at the General Parametrics Building in Berkeley on Sunday, May 22, 1994. Present at this meeting were the following board members:

NOARY, N3CKF, WA5HQJ, WD6CMU, KA6EYH, W6RGG, K6TAM, AB6YM, WB6YRU, N7YYG

Also in attendance were:

KD6DZZ, N6FRI, WA6GOL, N6QMY, WA6ZTY

1. The meeting was called to order by NOARY at 10:10. Introductions were made by all in attendance.

2. ELECTION OF OFFICERS. The following members consented to continue their terms as NCPA officers for the next year:

PRESIDENT: Bob Arasmith, NOARY
VICE-PRESIDENT: Roy Wysling, KA6EYH
TREASURER: Steve Overacker, WA6HAM
FREQUENCY COORDINATOR: Eric Williams, WD6CMU
EDUCATION COORDINATOR: Larry Kenney, WB9LOZ

New members seeking positions as officers were:

SECRETARY: Jeri Bissell, N7YYG
NEWSLETTER EDITOR: Richard Shappee, WA5HQJ

It was moved and seconded to accept these members as officers for the coming year, with general consensus of those present.

3. PACIFICON. Pacificon will be held Oct. 21, 22, and 23 this year at the Hilton in Concord. Bruce, AB6YM, consented to be our PACIFICON Co-ordi- nator. We want to have a NCPA informational booth, staffed by members, with information, membership applications, and NCPA books for sale. Bruce will find out from TAPR about flyers regarding their literature available, to be handed out. He will also be eliciting from NCPA members as well as thru a CA BBS bulletin, a listing of "Packet Elmers" to be made available at the booth, in conjunction with a "General Information" flyer to be created by Doug, WA6GOL. We want to have three organized sessions at PACIFICON: An Introduction to PACKET, An Introduction to TCPIP, and a General Q & A Session Bruce will arrange for these with Pete Tormey, N6QGN, who is respon-

sible for the technical program at PACIFICON. The selection of the leaders for the sessions will be discussed at the next board meeting.

4. APRS. It was mentioned that Tim Barrett, WD9BIV, had considered placing an APRS node on 144.91. Joe, N3CKF, agreed to talk to him about the advisibility of keeping all APRS on 145.01.

5. DIGITAL SPECTRA. Bob, N6FRI, as a member of NARC, brought up that CENPA (CENtral CAlifornia) has placed a request for two more frequencies on two meters for digital use. A group was selected to study this and identify additional spectrum in our area. The group includes N3CKF, WD6CMU, KA6EYH, W6RGG AND N6FRI. 6. BBS FORWARDING.

It was brought up that BBS forwarding is continuing on two meters. This will be referred to Brad, WA6AEO, in his capacity as the chairman of the SYSOPS group (NCXPN), to make contact with the BBSs involved.

7. DOWNLINK. The need for articles for the first issue of Downlink by the new Editor, Richard, WA5HQJ, was discussed. These members agreed to write articles: AB6YM — Elmers, NOARY — Internet, WB6YRU and WB9LOZ — New Packet Operators Questions, N3CKF — APRS.

8. SACVAL LAN. It was brought up that there is a snag in the Sacramento Valley BBS forwarding path. George, K6TAM, offered a node location at his site on Loma Prieta for use with forwarding. This will be brought up with the NCXPN at their next meeting, as a SBAY (South Bay LAN) project.

9. RESTRICTIVE BBS USE. Gary, WB6YRU, brought up the issue of BBS sysops restricting and censoring the communications of their users. He brought examples from the Santa Cruz BBS area. Bob, NOARY, indicated that this issue is more appropriately dealt with in the SYSOPS group. A discussion followed regarding the organization of the NCPA and its various sub groups.

10. The next Board of Directors Meeting has been scheduled for August 14, at 10:00 in Pleasant Hill. The exact site will be announced at a later time.

The meeting concluded at 12:35.

NCPA Board Meeting Minutes — August 7, 1994

The NCPA Board of Directors meeting took place at the Contra Costa Fire College in Concord on Sunday August 7, 1994. Present at this meeting were the fol ttendance were:

KOZQ, AB6YM, K6RAU, KB6AML, KD6DZZ, KD6MXL, W6RGG, WA6AEO, WA6GOL, WA6ZTY, WB6YRU

1. The meeting was called to order by NOARY at 10:13. Introductions were made about mid-meeting.

2. INTERFERENCE. Bob, NOARY, Said that Roy, KA6EYH called to his attention a problem with interference on 223.56, a West Bay LAN Frequency. This interference took the form of beacons, every 5 to 10 seconds, cascading thru 6 digi nodes. This interference has not been noted in the last 3 to 4 weeks and is assumed to have ceased.

3. DOWNLINK. Richard, WA5HQJ, is working on the newsletter to be published prior to PACIFICON. He is waiting for articles to be submitted that had been promised at the last Board Meeting. Apparently there has been difficulty getting messages to WA5HQJ at his BBS, KB6AML, due to an occasional bottleneck at N6QMY. It was suggested by NOARY that Richard be contacted via mail or directly via keyboard-keyboard packet.

4. DIGITAL SPECTRA. Fred, K6RAU, as a member of CENCA (CENtral CAlifornia) indicated that they are continuing to seek more frequendigital use. Bob, N6FRI, as a member of NARC, indicated that they do not "sanction" frequencies per se, but rather respond to identified groups who demonstrate a need to the amateur community. Specific frequencies to be monitored for activities were chosen. WD6CMU, WA6AEO, WB6YRU AND NOARY will monitor those frequencies and will report findings to WD6CMU by the end of the month.

5. RADIOS. Bob, W6RGG, stated that narrow band 220 data communication radios at a 9600 baud rate are becoming more and more reasonable in the marketplace. It is feasible that the are modifiable to HAM bands.

6. PACIFICON. We will have the last 3 seminars on Saturday:

An Introduction to PACKET, An Introduction to TCPIP, and a General Q & A Session.

We plan to distribute membership forms at the door at the end of the classes. We will have a table at PACIFICON, #13, at the same site as last year. Bruce, AB6YM, is our PACIFICON co-ordinator. He will have sign-ups for staffing the table. It is expected that we will have at least 2 people man the table at all times. We will set up a PACKET station with a PC for demonstration purposes, accept membership applications, and sell copies of "Introduction to PACKET Radio" and "The TCP\IP Primer". Bob, NOARY, will order additional copies so that we have 250 of each on hand.

7. TREASURER'S REPORT. Steve, WA6HAM, reported that we have a balance of $2599.40 in the NCPA account.

The meeting was adjourned at 11:55.

EOF

The next NCPA Board meeting will be Sunday, November 13th at 10:00AM. The location will be somewhere in the South Bay, yet to be determined, and will be announced via packet.

NCXPN Meeting Minutes

August 14, 1994, Concord, CA

WB9LOZ : Discussion of proposals to change forwarding designators to standard ones.

Resolution : The NCXPN voted to support the ALLxx forwarding designator on the state level (ALLFL, ALLCO). This would enable users to send bulletins into a region and then flood.

WB9LOZ : Discuss the proposal to use grid squares in the H address.

Resolution : The NCXPN is EMPHATICALLY against using grid squares for routing. They are neither intuitive nor practical.

WA6AEO : Acquisition of new frequencies for packet and especially BBS use.

Resolution : This organization encourages NCPA in it's efforts to develop new frequencies for packet use. The NCXPN needs new channels to accomodate new BBSs and space to move existing BBSs away from interference problems. The NCXPN requests any new frequencies be designated "node free" to reduce congestion and promote the cellular approach to BBS operation.

WA6AEO : South Bay WP and connectivity.

Resolution : N0ARY will check to make sure WP is routed toward WA6AEO, and is forwarding correctly. Some discussion on SBAY connectivity and ways to improve it.

WA6AEO : Status of porting N0ARY BBS code to LINUX.

Resolution : Bob reports that it's running in Colorado on a BBS with users. The project is not yet complete, there are still bugs being worked out.

WA6AEO : EBAY LAN plans to improve connectivity.

Resolution : A 6M link will be going in between EBAY and WBAY. A 1.2 GHz. link is planned to WX3K/NCOAST, which may also include KA6EYH/WBAY. EBAY also hopes to add a 220 node to the BALD (Orinda) nodestack, and it will probably go on the SBAY 220 frequency to provide a backup link to N0ARY.

WA6AEO : Map of NORCAL network.

Resolution : K6RAU will ask N6QIY if he will make a network map for NORCAL similar to the fine one he did for CENCA. WA6AEO will provide further information to him about NORCAL Network topology.

WA6AEO : NCXPN/Sysop meeting at Pacificon.

Resolution : The group generally agreed a meeting at Pacificon would be desirable. One will either be set up for just after the NCPA seminars or at Fuddrucker's (across the street) at 6 p.m. on Saturday.

EOF

NCPA General Membership Meeting

5/14/94 Cupertino, CA

The meeting was held at the Tandem facility in Cupertino. Thanks to Pat, N6QMY, for arranging the meeting room.

The meeting began with a demonstration of the APRS system and presentation by N3CKF/WB6LPG/KA6EYH. Those interested in participating in this mode can download the program from the KA6EYH bbs. Most of the APRS activity is taking place on 145.01.

Richard Shappee, WA5HQJ, volunteered to take over the position of "Downlink" editor. A special thanks to Mike, K3MC, who came out of retirement as our editor to get us over the last couple years. Mike will finalize the current issue and Richard can start fresh with the next.

The new board was nominated and elected. The board consists of:

KA6EYH Roy Wysling (BBS)
W6RGG Bob Vallio (DX)

K6TAM George Fisk (KBD)
WB6YRU Gary Mitchell (BBS)
AB6YM Bruce Parens (TCP/IP)
WA5HQJ Richard Shappee (ED)
N3CKF Joseph Pistritto (APRS)
N7YYG Jeri Bissell (KBD)

The meeting was concluded with a discussion on internet by Bob, N0ARY. The talk focused on the different kinds of internet connectivity and how the different gateways work.

The next NCPA board meeting will be held on May 22 at General Parametrics in Berkeley. Start time 10:00. The main agenda items are electing new officers and and remaining board positions.

Directions: 880 to Gilman St. offramp. Go East (towards the hills), over the RR tracks, through one light, turn left on 9th St. The building is on your immediate left (General Parametrics, 1250 9th St.).

As always, the board meetings are open to the public and your opinions are welcome.

73, bob (n0ary) #

EOF

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N0ARY @ N0ARY

Vice-President:
Roy Wysling, KA6EYH
KA6EYH @ KA6EYH

Secretary:
Jerri Bissell, N7YYG
N7YYG @ WA6RDH

Treasurer:
Steve Overacker, WA6HAM
WA6HAM @ WA6HAM

Newsletter Editor:
Richard Shappee, WA5HQJ

Frequency Coordinator:
Eric Williams, WD6CMU
WD6CMU @ WD6CMU

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.

We invite you to join NCPA! Become part of the most dynamic group of packet folks in Northern California!

NCPA *Downlink*

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