

**The Official Journal of the Northern California Packet Association**  
**Serving Amateur Radio Digital Communications in Northern California**

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## It's PO Box **K**

Apparently some of you are still sending stuff to the old NCPA PO Box. Please correct your records—the NCPA PO Box has been K for some time now. The USPS will stop forwarding from the old box to the new one before too long.

NCPA  
PO Box K  
Sunnyvale CA 94087

## President's Message

*Gary Mitchell, WB6YRU*

### Overall Band Plan

In the last issue, I mentioned that the NCPA and NARCC were in negotiations on a general band plan for 10 M and above over the region. (The NCPA and NARCC both cover the same territory, basically the top 2/3 of the state.)

The plans for 10 M through 70 cm are pretty much done now! (See elsewhere in this issue.) Work is still in progress on the rest (UHF).

From a digital perspective, we now have some long awaited digital duplex

channels (three) at 70 cm. These 100 kHz channels are expected to be especially useful for high-speed links. We tried to comply with the current standard 5 MHz shift, but due to existing usage, we couldn't quite make it—we came close however. The 70 cm digital segments are 433 MHz (including the lower of the duplex channels) and three 100 kHz channels at 438 for the other half of the duplex channels.

There wasn't any significant changes made to the rest of the digital segments in these bands.

We made every effort to follow the ARRL plan where possible, just to make life easier, but there are a few differences here and there.

It should be pointed out that these plans are not carved in stone. They are the best we could come up with given all the information available. Since these plans were a joint effort by the NCPA and NARCC, it's highly likely any changes would also need to be agreed to by both groups. So, if there is a problem or question, please bring it to the attention of myself (representing the NCPA) or Dave Shaw (V.P. of NARCC), preferably both.

### Elections at Pacificon

At the general meeting at Pacificon, the directors for 2001 were elected. It wasn't much of a shake-up, many of the same people were getting re-elected.

After the general meeting, the "new" board held a short meeting to elect

officers. Again, no major changes. (See the masthead in this issue for the new slate.)

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## Using your THd7a to connect to the KE6I BBS

Connecting to KE6I at 9600 baud is fun and easy using the THd7a. I have one of these radios, and it works great. What you need is the computer cable for the radio, and a computer, and any terminal program. I've just been playing with

this myself, and it works really good.

The Kenwood THd7a is Kenwood's digital handheld. They're advertised widely in the ham magazines and are available from dealers like AES or Ham Radio Outlet. These radios have lots of

interesting features, such as the ability to interface with the SSTV camera, APRS send and receive, and 9600 and 1200 baud packet. However, for the purposes of this article, I'm only discussing the ability of this handheld to act as a 9600 baud TNC.

Are you close enough to contact KE6I-1? If you're reasonably near to or have a good path to Berkeley, give it a shot. Even if you don't hear anything on the channel, 145.01, you still may be able to reach the BBS, since 9600 is difficult to detect by ear. I'm on the flats near University and Sacramento, and I have the antenna on a 30 foot mast. The antenna is omnidirectional. There are some trees to the east, but the path is pretty clear to the south, north and west.

How do you setup your software? Windows 98 comes with a program call hypertrm. It's installed in 'add/remove programs' under Windows Setup in the Communications checkbox. After you install it, try clicking on start, then run, and type 'hypertrm' in the box. This should bring up hypertrm.

Next, you want to connect your THd7a to the computer. This is pretty straightforward and covered in the manual for the THd7a. Just put the 9 pin d-shell connector in one of your PC serial ports and the mini jack into the pc plug on the THd7a. The cable is made by Kenwood and is available from ham radio stores. The cable includes software for uploading and downloading FM repeater frequencies to the radio.

Now, you want to turn on your THd7a, and set the frequency to either 145.01 or 433.43 MHz simplex. Press the 'Band' button until you see a inverse D by the frequency. Press VFO, then ENT, and then type in '1,4,5,0,1'. If you see a + or a -, then you're in split transmit receive so press F and then 'MHz' to set the radio to Simplex. Press the 'TNC' button until you see the work 'PACKET' light up on the display.

Note, that the digital band is set by a function in the menus. Press 'Menu' then up and down until you see 'Radio' and then right and up and down until you see 'TNC'. You can only connect to 433.43 MHz using band B.

Now, go back to hypertrm. Do not create a new connection at the first window, but instead cancel, and click on the rightmost button on the row of

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The digital band plan as well as other information about the NCPA, are available on the Web at: <http://www.n0ary.org/ncpa>

The NCPA Board of Directors meets electronically in order to transact association business and meet with members and interested amateurs. The address for the board mailing list is: [ncpa@qth.net](mailto:ncpa@qth.net). E-mail to [majordomo@qth.net](mailto:majordomo@qth.net) with the text "subscribe ncpa" in the body of the message to subscribe to the discussions.

buttons -- it highlights as properties. Set 'connect using' to refer to either Com 1 or Com2 depending on where you plugged in your cable. Then click on 'configure' and set 'Bits per second' to 9600. Data bits to 8, Parity to None, and Stop its to 1, and Flow control to Xon Xoff.

Be careful not to run hypertrm more than once, since only a single instance of this program can connect properly.

Now, press 'Enter' a few times on the keyboard and you should see a 'cmd:' prompt show up. At the 'cmd:' prompt type 'mycall n6yourcall' that is for your call. Next type 'hbaud 9600' to set the TNC to 9600 baud. And then type 'c ke6i-1' to connect to the KE6I BBS. You should now be connected.

If you don't see the 'cmd:' prompt, then make sure to check your settings as mentioned above. Also, it's possible that the com port is disabled in your BIOS. If that's the case, then enable the com port in the BIOS, and then select 'add new hardware' in the Windows control panel.

If you see the 'cmd:' prompt, but you're still not connected you may need a better antenna. I'm in Berkeley, so your luck connecting to me will be better or worse depending on how far you are from Berkeley.

And, if you find the 'cmd:' port was working, but then stops working, or is acting strange, try turning the THD7a off and on again. I've seen this radio get stuck in weird states where resetting is the only solution.

Once online, leave a message to me, the SYSOP. And, read some messages and things. And, then when you're done, type 'B' to logoff. You can also connect to the Berkeley node using the 'G' command to access my other ports.

Cathryn Mataga, KE6I  
[cathryn@junglelevision.com](mailto:cathryn@junglelevision.com)

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## NCPA General Meeting Minutes

10/21/2000 - Concord, CA

### General Meeting

1) Meeting was opened at 1740h (local time) by Gary Mitchell (WB6YRU)

1.1) Introductions were started, and a sign-in sheet was circulated

1.2) Attending: N6HM, KE6I, KG6BKA, AA4JM, K6MMB, KE6AFE, W6BNG, N6UOP, K6BP, KD6FJI, KJ6AF, W6RGG, N6UOW, KE6PUG, KE6BEZ, WA6PWW, WA6ZTY, WB9LOZ, K9AT, WB6YRU.

2) Gary described the NCPA, and the group origins. One quote from the early days was that the NCPA wanted to be "A United Nations for Packet Radio", to help unite special interest groups into a combined core, trying to help further experimentation with packet modes.

3) We had an update on the current cooperation between NCPA and NARCC (going very well, and we look forward to continuing the relationship), and Band Plan updates were reviewed.

3.1) The band plan was not included here, since it is posted on the NCPA web site, and the recent changes were posted in the recent Downlink.

4) A spirited discussion revolved around potential uses for the new High-Speed channels which were recently allocated for digital uses.

4.1) Concern was expressed over the lack of many off-the-shelf high-speed (greater than 9600 bps) gear, and the technical expertise needed to modify radios for high-speed use.

4.2) Bruce Perrins (K6BP) suggested that use of the new channels be restricted for 9600-bps and faster modes.

4.3) Bruce also highlighted some of the experimenting going on with newer (commercial) IEEE 802.11 wireless are

## Are You Still a NCPA Member?

Please check the mailing label... Has your membership expired? If so, why not renew your membership now while you're thinking about it? (There's a form on the back cover.)

**If your membership expired in 1998, then this will be your last Downlink!**

Memberships have been extended to allow for the fact that the *Downlink* hasn't come out quarterly, but this is it for those with 1998 expirations. If you are in that category, but feel you should have more issues coming anyway, please contact us.

equipment, noting that the frequencies something that Hams can use.

4.4) Jeff Komori (KH6JUZ) advised NCPA to publicize the allocation of the new channels, to encourage high-speed experimentation. Kit Blanc (WA6PWW) further urged NCPA to develop a "Press Release"-like document (with the info about the new freqs.) and distribute that to all of the clubs in our region, and encourage the clubs to publish the info in their newsletters. (The idea is being considered. -N6UOW-)

# DX Spotting Nodes

June 2000

<u>Location</u>	<u>Call</u>	<u>Alias</u>	<u>Frequency</u>	<u>Coverage</u>
California City	K6ZZ		144.490	Antelope Valley area
	EARN8		144.490	Oak Peak
Castro Valley Chico	W6RGG	DXCV	145.770	East, West, South SF Bay area
	K6EL	DXC	145.670	Chico
	K6EL	DXW	145.670	Oroville, Red Bluff
Hanford	K6EL	DX	144.950	South Fork Mtn - Redding area
	K6UR	DXFRES	144.950	Bear Mtn, Fresno area
	K6UR	DX7	145.770	Mt. Adelaide, Bakersfield area
Livermore	K6UR	DX16	145.770	Oakhurst
	NF6S	DXL	145.770	Tri-Valley area
Los Gatos	N6ST	DXLG	146.580	Santa Cruz Mtns, Monterey Bay
	N6ST	DXF	146.580	Santa Cruz/Los Gatos
Mountain View	K6LLK	DXMV	144.950	Mountain View, San Jose area
Oakdale	K6OQ		146.580	Modesto area
Penngrove	K6ANP	DXANP	145.670	Sonoma County
Reno, Nevada	N7TR	RENODX	144.950, 146.580, 441.500	(2400 baud), 51.7
	N7TR	PCDX1	146.580	Low Level in Reno
	N7TR	PCDX	144.950	Virginia City, NV
	N7TR	DX2400	441.500	(2400 baud)
Rio Linda	K6NP	DXRL	144.950	Sacramento, Woodland, Davis

Bob Vallio - W6RGG      wsixrgg@crl.com

4.5) Bruce Perrins that packet experimenters prepare to use the IEEE 802.11 and PSK protocols for high-speed modes.

4.6) Howard Krawetz (N6HM) suggested that NCPA consider adding a Director position on the NCPA board for "high-speed". Gary clarified that NCPA can accept new board members, but there were no volunteers in the room seeking that role.

4.7) Bruce further described some of the off-the-shelf gear that can be modified for point-to-point high-speed links, including the "WaveLAN" wireless PCMCIA devices, and the Apple AirPort.

5) Howard Krawetz gave the Treasurers Report. (\$303 in the bank.)

6) David Harris (N6UOW) gave the

Secretary's Report. Watch for a new page on the NCPA web site, where members can update their contact info. (Due to security concerns, members will not be able to view their information, just submit updates.)

7) Gary suggested that many of the topics discussed at the meeting would make good, small articles for the Downlink, and encouraged participants to take a bit of time to write them up.

8) Current NCPA Board members were polled, to see who was willing to accept nominations to continue their role on the board. (This part moved quick, and I was involved...was there anyone declining?)

8.1) Absent board members had previously submitted nomination acceptance to the NCPA mailing list(s) and/or to Gary directly.

8.2) Barry Barnes (KE6LW) is withdrawing from the board.

8.3) Bruce Perrins declined a nomination, but he said that he would be willing to help whoever takes on a "New Technologies" seat on the board.

8.4) Bob Vallio (W6RGG) moved that the nominations be closed, and Howard seconded.

8.5) A vote of the attending members to approve the nominated slate of Board Members, and it passed unanimously.

8.6) Elected Directors are:

W6BNG - Mel Gregonis - High Speed (new technologies)  
 N6UOW - David K. Z. Harris - APRS  
 N6HM - Howard Krawetz - Keyboard  
 WH6IO - Bob Fahnstock - TCP/IP  
 W6RGG - Bob Vallio - DXPSN

WA6ZTY - Mike Fahmie - BBS,  
Keyboard  
WB6YRU - Gary Mitchell - BBS

9) A few last-minute topics were raised.

9.1) Mike Fahmie (WA6ZTY) started a discussion about keyboard-to-keyboard traffic.

9.2) Another member (female, who? Catherine Mataga, KE6I?) asked for (and recieved) a description of Phase III-D digital operations.

9.3) A couple of corrections were made to the BBS and DXPSN lists that had been handed out at the NCPA display table.

10) The meeting was adjourned at 1745h.

### Board Meeting

A) The meeting immediately followed the General Meeting, in the same room.

B) Mel Gregonis (W6BNG) proposed accepting the slate of current officers.

C) Gary polled the current officers, and all were willing to continue.

D) Gary called for volunteers to fill the currently-open position of Vice President, but none came forward. Gary asked for someone to take over the Frequency Coordinator position, but again, there were no takers.

E) Bob Vallio (W6RGG) seconded accepting the current slate of officers. There were none opposed.

F) The meeting was adjourned at 1753h.

--  
David K. Z. Harris

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## Board of Directors Electronic Meeting

*Excerpts of the NCPA board remailer traffic, September 5, 2000 through*

*November 27, 2000. Compiled by Gary Mitchell WB6YRU (full text of traffic is available).*

Oct. 2, 2000

Gary WB6YRU:

We have a request for two 70 cm keyboard frequencies. Currently, there aren't any 70 cm keyboard channels (except for one link frequency) 433.51 and 433.53 are available, I propose those.

Also, what does everyone think about allocating 433.31-433.35 (currently not specified) to a 50 kHz experimental channel? (The actual space available is 433.30-433.36.)

Furthermore, work is underway to get 300 kHz somewhere around 438 or 439 MHz for digital duplex. What about allocating 433.75, 433.85, and 433.95 to 100 kHz channels for the lower part of three duplex channels?

Howard N6HM:

I am in favor of all these allocations. We currently have an urgent need for the two keyboard channels. We should also start thing ahead and allocate the duplex channels now so as not to delay development of duplex packet in the near future.

Oct. 13, 2000

Gary WB6YRU:

Dave Shaw (NARCC VP) and I have been working on the overall band plan. The following is ready for comment. (listed current band plan for 10 M - 70cm)

Oct. 18, 2000

Gary WB6YRU:

Announced time at date of general meeting at Pacificon

Oct. 19, 2000

Bob W6RGG:

reports e-mail from the remailer is `b o u n c i n g f r o m : listmaster@n6sle.ampr.org` and `wh6io@benicia.ampr.org`

Gary WB6YRU:

WH6IO is Bob in Benicia. The ampr.org domain may just be temporarily down,

that has happened before.

(Posted the latest changes to overall band plan and asked for comments)

Mel W6BNG:

I know N6SLE! He is a long time member of the Livermore Amateur Radio Klub (LARK) and long time TCP/IP "packeteer". Far as I know he's still around, I'll check on his status.

Oct. 29, 2000

Cathryn KE6I:

<http://www.d-d-s.nl/23linken.htm>

Here's a place that sells a transceiver for 1.2Ghz for around \$233.28. They run 2-3 Watts and can handle up to 200 kbaud.

Oct. 31. 2000

Mike WA6ZTY:

Just saw a packet bulletin from John, AA6QN, announcing that he is adding SatGate functions to his bbs in SCA. He replaces Carol, W9HGI Gilroy, who went QRT last June in preparation for retirement and relocation.

Nov. 1, 2000

Bob W6RGG:

Dana Myers K6JQ reports:

According to the 28 October 2000 board meeting minutes, the SCDCC called it quits. <http://www.qsl.net/scdcc/>

Cathryn KE6I:

What were the differences between CENCA, SCAPS and SCDCC and Westnet and all that, anyway.

Gary WB6YRU:

CENCA was the BBS region of the central valley. They used to be part of the PSNC. They have disbanded.

SCAPS is the southern CA equivalent of the PSNC (BBS sysops).

SCDCC was the southern CA equivalent of the NCPA.

Westnet is now not much more than a packet BBS resource list. It covers many of the western states.

Nov. 2, 2000

Dana K6JQ:

In SoCal, the only packet activity not

dwindling into the noise floor is APRS, which amuses the dickens out of me. (A) It's a neat application and just interesting enough to keep going for a while and (B) it's mostly about transmitting all the time, it couldn't be easier! There are problems, not the least of which is that there is no credible model to scale APRS up in the future IMHO (at none that are entirely radio-centric). I also tend to think the novelty will eventually wear off.

Frankly, the commercial wireless data

market is going to dry up most of the remaining interest in packet. Mark my words. Packet is still focused at pushing bits across the air and we're not service-centric for a number of reasons; the wireless data folks are rolling out turn-key consumer wireless services at light speed.

We're forever stuck at the level of science fair projects if we're not willing to integrate other networking capabilities into our projects.

Steve KG6DFV:

I've been talking with Doug Thom about setting up a more structured IP network in the bay area. I'm about 75 percent of the way there in getting some space up on Mt Pleasant road (on one of the higher points) at a commercial FM site. I've also got space on the tallest building in downtown San Jose. I'm hoping to put together a network for the purpose of packet->internet connectivity for as much of the bay area as I can reach ;). Interested? Email me! :) ser@tch.org

Nov. 27, 2000

Dave (Zonker) N6UOW:

Posted the NCPA General Meeting Minutes from Pacificon.

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## Packet Sysops of Northern California Packet Bulletin Board Systems October 2000

Call-SID -----	Location -----	User Ports -----
WH6IO	Benica	144.99, 145.71&+, 145.75&, 433.43&+
N6EEG	Berkeley	144.97
KE6I	Berkeley	145.01&, 433.43&
N2THD-1	Citrus Heights	145.07, 441.50
WA6YLB	Exeter	145.69
N6QMY-1	Fremont	144.31, 441.50
N6CKV	Gilroy	144.99
N6LDL	Los Gatos	144.97, 145.71&, 441.50
WA6NWE-1	North Highlands	144.93, 145.09, 145.75, 441.50
KD6DG	Redding	145.09
WD6CMU*	Richmond	144.97*
W6CUS-1	Richmond	145.63
N0ARY-1	San Jose	144.93, 433.37&
KD6JZZ	Sonora	144.97
WA6EWW-1	South Lake Tahoe	144.97
W6YX-9	Stanford Univ	145.75+
W6SF	Stockton	144.99
K6MFV	Walnut Creek	144.31, 145.71&+
K7WWA*	Willits	144.31*, 145.69*

Keys:

& = 9600 Baud Port

+ = TCP/IP Port

\* = Currently Inactive

## Impressions Of Pacificon '00

*Howard Krawetz, N6HM*

Well as I sit here on Halloween and ponder my recent trip to Pacificon'00 certain things cross my mind. First Pacificon'00 seemed smaller this year. There were many vendors who had attended in the past and were missing this time. The various ARRL presentations and forums were interesting and informative.

### APRS

There was a lot of talk about the old/new and updated technologies. Like many people, I was interested in APRS, but could never seem to get the receive end to work, and you know the old adage, if you can't hear them, you can't work them. I discussed this with Dave "Zonker" Harris, N6UOW, our director for APRS. I told him how on many occasions I had downloaded an APRS program only to find that I could not get it to work! He suggested that the big problem is in using DOS based programs. They just require too much from DOS and need lots of patches. He then gave me a handout he was providing at the convention and told me

to go to a particular web page link and try that Windows based program. The web page that started it all is: <http://www.dididahdidit.com/aprslink.php>. (For those of you that might not recognize the dit and dahs it stands for the symbol “?”.)

That page has a lot of interesting links on it. He suggested I go to the: Mark & Keith’s Rutgers APRS site to support Mac and Windows APRS. (Boy, is that a mouth full!)

Anyway, I downloaded the Windows version. Then I installed it on my ZIP drive. (This way I figured if it did not work too well I could dump it easier.) Well, to my surprise the program expanded itself and was ready to work without going into the registry and all that junk. When I turned it on it just asked for my call sign and then after a moment or two my speaker started to send “beep beep” sounds just a car honking. A moment after the sounds, symbols with call signs and all kinds of interesting data started showing up on my computer screen. Eureka! The program was working. So first the first time, me, a rank uninformed on APRS amateur was copying APRS. Thanks Dave, now I am another APRS user.

## PSK31

Another hot topic of conversation was PSK31. One of the new HF digital modes. I have never used it before so after all that talk I had to try it. But first I had to get the program, but from where? A short web search turned up one site called “The Official PSK31 WWW Homepage. The web address for this site is:

<http://aintel.bi.chu.es/psk31.html>

I went to that web page and found what looked like a nice PSK31 program. I downloaded the compressed program on to my ZIP drive and then downloaded the literature some of which was in HTML format and some was in Adobe. Am I glad I did that, I’ll tell you why later.

I uncompressed the program and then went to the setup file. This time I outsmarted myself. The program ran off

the ZIP drive OK, but it did install itself into the Windows Config. files. So now the program resides on my ZIP drive but if I want to move it I have to uninstall it first. I can’t just dump it.

Anyway, I started the program and the first thing it wanted was my call sign. I gave it my call sign and it started working. Then I needed to know where to tune my transceiver to find PSK31 signals? So back to the ZIP drive and look at the html files that were buried there. One file finally jumped up and said “*Proposed frequencies for PDK31 QSO*”. Now wasn’t that nice, they even told me where to go to hear the signals. So I tuned to 14070.150 kHz and the program started to do something. However, the displayed spectrum in the bottom had a few blips on the spectral display. I clicked my mouse on one of the blips and a yellow line moved over to that location. At the same time the program identified channel 1 and data started pouring in. Intelligent data! The program was copying stations in a QSO (cool). Then I turned off my speakers and had a very quiet shack that was just copying both sides of a radio conversation without noise.

Next installment I’ll let you know what its like to transmit in these modes.

## SSTV

Yes there is another mode out there. I have been playing with Slow Scan TV (SSTV) for some time now. This is an old transmission mode that has been updated and made new. I used several computer aided programs for sending and receiving photos in real time and finally landed on CPIX by Silicon Pixels. This is the most versatile and easy to use Windows based program I have found. I have been playing with this program for about a year and recently broke down and paid to register it. (I did that just to get rid of the nag screen). All kinds of new and nice features opened up and started to work. The program can be found and downloaded from:

<http://www.siliconpixels.com>

One of the authors of the program is Jim Barber, N7CIX, and he is most

responsive to e-mail questions. I feel like he is always there when I need him. His address is in the Help menu of the program. He has been very patient and helpful with all my questions. Anyway, there are people all over the HF bands sending and receiving photos. If you load the demo program in your computer, you can participate in that fun.

While at Pacificcon’00 I had the opportunity to talk to one of the Kenwood Reps. about their VC-H1 Visual Communicator. I told them about the limitations of the unit the way it only has one old SSTV format called Robot 35 that is about 40 years old. I asked why they did not have other more modern formats in their units? His response was, “Ah ha!” if you use the unit with other peoples radios that is true, but if you use the unit with the Kenwood TH-D7A (G) data communications radio, then you can initiate at least 10 different SSTV formats and the TH-D7A will be upgradeable in the future to more or different formats. So what does that mean to you and me? Well, if you want to be very portable with SSTV you have to purchase one TH-D7A (G) for about \$400.00 and one VC-H1 camera unit for \$300.00 or a total of \$700.00 for portable VHF/UHF SSTV. So the bottom line is just bring money! Money and Kenwood will solve all your SSTV problems.

The only other way that I know of is to bring your HT, camera, and a laptop or smaller computer. Take the photo with the camera, download it into the computer and then send it out with whatever radio you have. One word of caution, use only computers that have a Windows fully compatible sound card like Sound Blaster. Other sound cards could work with SSTV, but probably won’t because the hardware is OK, but the drivers are not compliant. That will cause you to send defective (skewed or torn) photos.

**EOF**

# Northern California Packet Band Plan

N C P A

October 2000

## 50 MHz

50.60-50.80 (20 kHz channels, non-specific at this time)  
51.12 SCA backbone  
51.14 BBS  
51.16 Keyboard to Keyboard  
51.18 Experimental  
51.62 TCP/IP, 9600 baud  
51.64-51.68 (20 kHz channels, non-specific at this time)

---

## 144 MHz

144.31 BBS  
144.33 Balloon & experimental  
144.35 Keyboard to Keyboard  
144.37 BBS LAN forwarding  
144.39 APRS (U.S. and Canada)  
144.41 duplex, lower half (145.61 upper half, 1.2 MHz split)  
144.43 TCP/IP (OK to run duplex with 145.65)  
144.91 Keyboard to Keyboard  
144.93 BBS  
144.95 DX Spotting  
144.97 BBS  
144.99 BBS  
145.01 User access  
145.03 Keyboard to Keyboard  
145.05 Keyboard to Keyboard  
145.07 BBS  
145.09 BBS  
145.61 duplex, upper half (144.41 lower half)  
145.63 BBS  
145.65 TCP/IP 9600 bps (OK to run duplex with 144.43)  
145.67 DX Spotting  
145.69 BBS  
145.71 9600 bps  
145.73 BBS  
145.75 TCP/IP  
145.77 DX Spotting  
146.58 DX Spotting

### NOTES:

- Allocations from 144.31 through 144.43 are relatively close to the weak-signal sub-band--watch your deviation.
- 

## 220 MHz

219.05-219.95 100 kHz channels, Backbone  
223.54 LAN  
223.56 LAN  
223.58 LAN, Gilroy (GARLIC)  
223.60 LAN, Sacramento Valley (SACVAL)  
223.62 LAN, South Bay (SBAY)  
223.64 TCP/IP  
223.66 Keyboard to Keyboard

223.68 DX Spotting Backbone  
223.70 LAN, Monterey Bay & North Coast (MRYBAY)  
223.72 LAN, North Bay (NBAY)  
223.74 Backbone, DX Spotting

### NOTES:

- 219 channels are by coordination only. There are currently political problems with using 219-220, making them unavailable in most of northern CA.
  - On 223.58, TCP/IP interlink (Sacramento) is secondary, not to interfere with node uplink.
- 

## 440 MHz

433.05 TCP/IP backbone (100 kHz)  
433.15 BBS backbone (100 kHz)  
433.25 DX Spotting backbone (100 kHz)  
433.33 Experimental (60 kHz)  
433.37 BBS, 9600 baud  
433.39 DX Spotting  
433.41 BBS LAN  
433.43 9600 baud TCP/IP  
433.45 BBS LAN  
433.47 Keyboard Interlink  
433.49 TCP/IP  
433.51 Keyboard  
433.53 Keyboard  
433.55 BBS LAN  
433.51 - 433.70 (20 kHz channels non-specific at this time)  
433.75 / 438.45 Duplex (100 kHz)  
433.85 / 438.55 Duplex (100 kHz)  
433.95 / 438.65 Duplex (100 kHz)  
441.50 Any digital

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## 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, LAN links (Contra Costa County only)

900 MHz activity is on a non-interference basis to vehicle locator service. This sub-band is not considered suitable for omnidirectional systems. Use for point-to-point links only.

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## 1296 MHz

1248.500 1 MHz wide, experimental\*  
1249.000-1249.450 Unchannelized, experimental  
1249.500 100 kHz wide, experimental  
1249.600 100 kHz wide, experimental  
1249.700 100 kHz wide, experimental\*  
1249.800 100 kHz wide, experimental\*  
1249.870 20 kHz wide, experimental  
1249.890 20 kHz wide, DX Packet Spotting  
1249.910 20 kHz wide, experimental\*  
1249.930 20 kHz wide, experimental\*  
1249.950 20 kHz wide, experimental\*  
1249.970 20 kHz wide, experimental\*  
1249.990 20 kHz wide, experimental\*  
1250.500 1 MHz wide, experimental  
1251.500 1 MHz wide, experimental  
1297.000-1298.000 Unchannelized, experimental  
1298.500 1 MHz wide, experimental\*  
1299.000-1299.450 Unchannelized, experimental  
1299.500 100 kHz wide, experimental  
1299.600 100 kHz wide, experimental  
1299.700 100 kHz wide, experimental\*  
1299.800 100 kHz wide, experimental\*  
1299.870 20 kHz wide, BBS LAN  
1299.890 20 kHz wide, DX Packet Spotting  
1299.910 20 kHz wide, BBS LAN  
1299.930 20 kHz wide, experimental\*  
1299.950 20 kHz wide, experimental\*  
1299.970 20 kHz wide, experimental\*  
1299.990 20 kHz wide, experimental\*

\* Full duplex channel pairs at 50 MHz separation, example:  
1249.910 ↔ 1299.910

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## Definitions

9600 BPS Stations using 9600 baud with direct FSK (G3RUH, TAPR, etc.) modems.

Backbone No uncoordinated stations. These channels are for specific purposes as defined by the NCPA and/or affiliated groups. These are frequencies where the various BBS, nodes, and networks forward traffic and are very high volume channels. Please use the normal user entry points of the network you want to access rather than these channels.

BBS These frequencies are for user access to a full-service BBS. Keyboard-to-keyboard is tolerated. Please don't put high level nodes or digipeaters on these channels since they are local. A low-level direct link or node that links into a backbone on another frequency is the proper implementation.

Duplex Simultaneous transmit and receive by a single station, including digital repeaters. Duplex channels are intended for high-volume applications. 9600 baud or higher is encouraged, but not required at this time.

DX Spotting Northern California DX packet spotting network. No

other activity should be on these channels.

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

Forwarding same as *backbone*

Keyboard to Keyboard Primarily chat channels. These are also the primary emergency channels. No high-volume activity such as full service BBS, DX Spotting, TCP/IP, etc.

Interlink same as *backbone*

LAN Local Area Network. BBS's are grouped into LAN's for more efficient forwarding. A LAN frequency is the forwarding channel within a LAN and to the backbone. Please do not attempt to access the BBS network on these channels.

Personal mailbox/maildrop A BBS-like system, often running entirely within a TNC, with a small number of users that handles information of a personal, local or special-purpose nature. A mailbox is allowed on keyboard-to-keyboard channels ONLY if it does not forward with other BBSs. Mailboxes may forward with full-service BBSs on LAN channels at the discretion of the BBS SYSOP.

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

User Access User access to a network. This is for the next generation of packet which is expected to operate like the internet. Users would access such a network on these frequencies. The load on these channels may be rather high, like BBS channels. The activity may be any combination of BBS, keyboard, TCP/IP, or other modes.

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## Procedure for changes

Send requests for changes to either the frequency coordinator or the NCPA board. The frequency coordinator will then present the request to the board along with suggested assignments. The NCPA board, elected by you, the packet user, makes all assignments.

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## Misc. Info.

Packet tends to splatter if the deviation is set too high. Please keep your deviation to less than 5 kHz.

Except for the 219-220 MHz segment, the NCPA currently does not coordinate individual stations, nodes, etc. leaving that to the special interest groups. BBS station coordination is done by the PSNC in Northern CA. DX spotting is coordinated by DXPSN. Some digital has been coordinated on auxiliary channels by NARCC.

The NCPA board conducts most of its meeting activity electronically by internet e-mail remailer, [ncpa@qth.net](mailto:ncpa@qth.net). As with face-to-face board meetings, interested persons are welcome. Subscribe to the remailer by sending e-mail to [majordomo@qth.net](mailto:majordomo@qth.net) with "subscribe ncpa" as the message. Subscribing to the remailer is like attending a continuous NCPA board meeting.

# Overall Band Plan in Northern California

ten meters and above

November 2000

## Notes:

This band plan is a joint effort by NARCC ([www.narcc.org](http://www.narcc.org)) and the NCPA ([www.n0ary.org/ncpa](http://www.n0ary.org/ncpa)). As of this printing, ten meters through 70 cm are pretty much settled, the rest is in progress.

Other sources:

Weak Signal: WSWSS (Wester States Weak Signal Society) [www.wswss.org](http://www.wswss.org).

Satellites: AMSAT [www.amsat.org](http://www.amsat.org).

ARRL: [www.arrl.org](http://www.arrl.org).

Individual channels are 20 kHz wide, unless otherwise noted.

Simplex - FM voice

RC - Remote Control

## TEN METERS =====

			SSTV 28.68	29.0	29.2	
					- AM -	
CW	CW and	CW & beacon				
Weak Signal	Digital	Weak Signal	Phone (no FM)			
-----	-----	-----	-----	-----	-----	-----
28.0	28.07	28.190	28.3			29.3

	National simplex 29.60		
	Repeater	Repeater	
Satellite	Inputs	Outputs	
-----	-----	-----	-----
29.30	29.51	29.60	29.70

Note: Automatic beacons are limited to 28.20 - 28.30

## SIX METERS =====

	50.12 SSB Calling					
		50.40 AM Calling				
				Remote	Weak	
Weak Signal	All Mode	Digital	Control	Signal	Digital	
-----	-----	-----	-----	-----	-----	-----
50.0	50.3	50.6	50.8	51.0	51.11	51.19

Repeater		Repeater		Repeater		
Inputs	Simplex	Digital	Outputs	Simplex	Inputs	
-----	-----	-----	-----	-----	-----	
51.19	51.49	51.61	51.69	51.99	52.05	52.49

			RC 53.20		RC 53.40	
			RC 53.10		RC 53.30	
	Repeater					
Simplex	Outputs	Simplex		Repeater	Inputs	
-----	-----	-----	-----	-----	-----	-----
52.49	52.55	52.99	53.03			53.49

53.50 RC	RC 53.60	RC 53.70	RC 53.80	RC 53.90	Simplex
Simplex	Repeater Outputs				
53.49	53.53				53.99

**TWO METERS** =====

144.20 SSB Calling					
Weak Signal			Digital		Repeater
Sat.		Inputs		Digital	
144.0	144.3	144.44	144.5	144.9	145.1
Repeater		Repeater		Repeater	
Outputs		Exp.		Digital	
Exp.		Digital		Satellite	
Inputs		Inputs			
145.1	145.5	145.6	145.785	146.0	146.4
146.52 Calling					
146.58 Digital					
Repeater			Repeater		
Simplex		Outputs		Simplex	
Outputs		Outputs			
146.4	146.6	147.4	147.6	148.0	

**1.25 METERS** =====

High Speed Digital (shared)					
219.0					220.0
222.10 Calling			223.50 Calling		
Weak		Repeater		Repeater	
Signal		Inputs		Simplex	
Simplex		Digital		Repeater	
Outputs		Outputs			
222.0	222.15	223.39	223.53	223.75	225.0

**70 cm** =====

432.10 calling						
Aux.			Exp.		Exp.	
Links		ATV #2		Mix.		Satellite
Mix.		Signal		Digital		
420.0	425.0	431.0	432.0	433.0	434.0	435.0
441.0 Simplex				446.0 Simplex Calling		
441.5 Digital			446.5 Simplex			
Aux.		Aux.				
Links		Digital		Repeater		
Repeater		Outputs		Repeater		
Inputs		Inputs				
438.0	438.4	438.7	440.0	445.0		450.0

## Northern California Packet Association

The NCPA fosters digital communications modes of amateur radio through education, band planning, and acts as an umbrella organization for various packet special interest groups. Your annual dues helps pay for this newsletter and other educational materials activities. If you might be interested in getting more involved, please let us know.

Call: \_\_\_\_\_ Home BBS: \_\_\_\_\_ e-mail: \_\_\_\_\_

Name: \_\_\_\_\_ Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip + 4: \_\_\_\_\_ Phone: \_\_\_\_\_

- New Membership     Renewal     Change of Address     I'm an ARRL Member  
 One year: \$10     Two Years: \$20     Three years: \$30  
(make checks payable to NCPA)

Please indicate your area(s) of interest:

- BBS SysOp     BBS User     APRS     NET/ROM     TCP/IP     High-speed packet  
 DX Packet Spotting Network     Keyboard to Keyboard     FCC/legal issues     Other:

**NCPA** *Downlink*

**Northern California Packet Association**  
**PO BOX K**  
**Sunnyvale CA 94087**

**First Class**