NCPA *Downlink*

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

President's Message

Gary Mitchell, WB6YRU

In the last issue, I described the meeting we had with NARCC (et al) at Pacificon '99 regarding band planning. I reported that the effort started then seems to have stalled and that NARCC hadn't responded to our draft of an overall band plan. Unfortunately, that continues to be the case.

The only development is that earlier this year NARCC got a new president: Bob Lanning, W6OPO.

Bob seems very interested in working with the NCPA. I'm hopeful he will make more progress than his predecessors. We'll just have to wait and see.

Overall band plan

A while back the board voted to draw up an overall band plan where the NCPA would recognize existing band usage. This *Downlink* issue contains the latest draft.

It's important to keep in mind that some parts are more tentative than others. Please also keep in mind that except for the digital segments, the NCPA is not doing band planning for all these bands. The non-digital segments are merely the usage currently recognized by the NCPA.

Since it is still in theearly stage, it is expected that some parts may change in the not-too-distant future. Much depends on how things go with NARCC.

For now, feel free to look over the plan and offer comments...just remember, it's not carved in stone.

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Treasurers Report

As of the latest bank statement that covers the period of April 19 through May 18, 2000 our great organization has a grand total of $220.10 in the bank. We need the support of all our members to bring fund raiser ideas to the table. To some extent the strength of an organization is directly dependent upon the strength of our treasury. Any ideas any of you members may have to build up the organization's treasury would be most appreciated. Please put on your thinking cap and let us hear from you.

Howard M. Krawetz, N6HM
Treasurer

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News from the ARRL

Amateur Restructuring is Here: Three License Classes, One Code Speed

NEWINGTON, CT, Dec 30, 1999--Amateur Radio will get a new

look in the new millennium. The FCC today issued its long-awaited Report and

Order in the 1998 Biennial Regulatory Review of Part 97--more commonly known as "license restructuring." The bottom line is that starting April 15, 2000, there will be three license classes--Technician, General, and Amateur Extra--and a single Morse code requirement--5 WPM.

"We believe that an individual's ability to demonstrate increased Morse code proficiency is not necessarily indicative of that individual's ability to contribute to the advancement of the radio art," the FCC said.

Besides drastically streamlining the Amateur Radio licensing process, the FCC said its actions would "eliminate unnecessary requirements that may discourage or limit individuals from becoming trained operators, technicians, and electronic experts."

Although no new Novice and Advanced licenses will be issued after the effective date of the Report and Order, the FCC does not plan to automatically upgrade any existing license privileges. The ARRL had proposed a one-time across-the-board upgrading of current Novice and Tech Plus licensees to General class, but the FCC declined to adopt the idea. This means that current licensees will retain their current operating privileges, including access to various modes and sub-bands, and will be able to renew their licenses indefinitely.

Starting April 15, 2000, individuals who qualified for the Technician class license prior to March 21, 1987, will be able to upgrade to General class by providing documentary proof to a Volunteer Examiner Coordinator, paying an application fee, and completing FCC Form 605.

The FCC's decision not to automatically upgrade Novice and Tech Plus licensees means the current Novice/Tech Plus HF sub-bands will remain and not be "refarmed" to higher class licensees as the ARRL had proposed. The FCC said it did not refarm these sub-bands because there was "no consensus" within the amateur community as to what to do with them.

As it had proposed earlier, the FCC decided to lump Technician and Tech Plus licensees into a single licensee database, all designated as "Technician" licensees. Those who can document having passed the 5 WPM Morse code examination will continue to have the current Tech Plus HF privileges. "If documentation is needed to verify whether a licensee has passed a telegraphy examination, we may request the documentation from that licensee or the VECs," the FCC said.

In addition to reducing the number of license classes from six to three and eliminating the 20 and 13 WPM code tests, the FCC also will reduce the number of written examination elements from five to three, authorize Advanced Class hams to prepare and administer General class examinations, and eliminate Radio Amateur Civil Emergency Service (RACES) station licenses. RACES will remain, however. "After review of the record, we conclude that we should eliminate RACES station licenses because RACES station licenses are unnecessary for amateur stations and amateur service licenses to provide emergency communications," the FCC said.

Under the new licensing scheme, there will be four examination elements. Element 1 will be the 5 WPM Morse code exam. Element 2 will be a 35-question written test to obtain a Technician license; Element 3 will be a 35-question written test to obtain a General license, and Element 4 will be a 50-question written test for the Amateur Extra license. The FCC has left it in the hands of the National Conference of VECs Question Pool Committee to determine the specific mix and makeup of written examination questions. Current Amateur Radio study materials remain valid at least until the new rules become effective in April.

The FCC's new licensing plan means someone will be able to become a ham by passing a single 35-question written examination. The plan also simplifies and shortens the upgrade path from the ground floor through Amateur Extra--especially since amateurs will only have to pass one Morse code test. Elimination of the 13 and 20 WPM Morse requirements also means an end to physician certification waivers for applicants claiming an inability to pass the Morse code examination due to physical handicap.

The effective date provides a window of upgrade opportunity for current Advanced licensees. Between now and April 15, current Advanced holders may take the existing Element 4B, a 40-question test, giving them credit for having passed the current Extra written examination. Likewise, holders of a Certificate of Successful Completion of Examination (CSCE) for Elements 3B or 4B dated on or after April 17, 1999, will be able to qualify for General or Amateur Extra respectively when the new rules go into effect on April 15, 2000.

The FCC disagreed with the League's suggestion that it undertake a restructuring of operating privileges along with licensing restructuring. "We believe that in light of ongoing discussions concerning implementation of new and more modern communications technologies within the amateur service community, we should accord the amateur service community an opportunity to complete such discussions and possibly reach a consensus regarding implementation of new technologies before we undertake a comprehensive restructuring of the amateur service operating privileges and frequencies," the FCC said in its Report and Order.

In its amendments to Part 97, the FCC's

DX Spotting Nodes
June 2000

Location	Call	Alias	Frequency	Coverage
California City	K6ZZ		144.490	Antelope Valley area
	EARN8		144.490	Oak Peak
Castro Valley	W6RGG	DXCV	145.770	East, West, South SF Bay area
Chico	K6EL	DXC	145.670	Chico
	K6EL	DXW	145.670	Oroville, Red Bluff
	K6EL	DX	144.950	South Fork Mtn - Redding area
Hanford	K6UR	DXFRES	144.950	Bear Mtn, Fresno area
	K6UR	DX7	145.770	Mt. Adelaide, Bakersfield area
	K6UR	DX16	145.770	Oakhurst
Livermore	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	144.950,146.58,441.500 (2400 baud), 51.7	
	N7TR	PCDX1	146.580	Low Level in Reno
	N7TR	PCDX	144.950	Virginia City, NV
	N7TR	DX2400	441.500 (24OO baud)	
Rio Linda	K6NP	DXRL	144.950	Sacramento, Woodland, Davis

Bob Vallio - W6RGG   wsixrgg@crl.com

Report and Order refers to a "Club Station Call Sign Administrator," something that does not exist under the current rules and which was not explained in the R&O itself. An FCC spokesperson said the Commission plans to issue a Public Notice soon to explain the program and to solicit qualified entities to serve as call sign administrators for club station applications.

A copy of the entire Report and Order (FCC 99-412) is available at http://www.arrl.org/announce/ regulatory/wt98-143ro.pdf or at http://www.fcc.gov/Daily_Releases/ Daily_Business/1999/db991230/ fcc99412.txt

Rick Lindquist, N1RL
Senior News Editor, ARRL HQ
n1rl@arrl.org

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Board of Directors Electronic Meeting

Excerpts of the NCPA board remailer traffic, September 14 through November 11, 1999. Compiled by Gary Mitchell WB6YRU (full text of traffic is available).

Sep 14, 1999
WB6YRU discusses 70 cm plan.
We need to investigate further 420-426 (ATV-1). NARCC has been very secretive about any allocations there. If there isn't much there, this probably should be recognized as ATV. ATV usage at 433-439 is very rare these days. What little is left might be better off at 420. Recommend we do not recognize ATV at 433-439. Recommend we allocate 433.0-434.0 as digital.
For the future: Recommend we consider 438.0-439.0 for digital--especially for duplex with 433. Recommend we consider suggesting 434.0-435.0 for FM simplex, misc., and additional digital (as needed).

Sep 14, 1999
WB6YRU:

Packet Sysops of Northern California Packet Bulletin Board Systems
June 2000

Call-SID	Location	User Ports
WH6IO	Benica	144.99, 145.71&+, 145.75&, 433.43&+
N6EEG	Berkeley	144.97
KE6I	Berkeley	145.71&
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&*
KB6MER-1	San Jose	145.73*
KD6JZZ	Sonora	144.97
WA6EWV-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

Announces NCPA meeting at Pacificon Reports on internal shake-up at NARCC. John Ronan K3ZJJ is now their president. K3ZJJ tells me most of the old guard clique of NARCC is out of office and many of the coordinators also jumped ship at that point (something about not maintaining coordinations, paperwork etc.). John wants to meet with us at Pacificon.

About the Spectrum Management Committee...
John is a retired attorney and was involved in the drafting of NARCC's change to its bylaws which added their in-house SMC. However, he apparently was unaware of the independent SMC that we were working on with NARCC.

N6FRI: Most of the new NARCC board is composed of Mt Diablo radio club members--watch out for conflicts of interest to surface.

WB9LOZ: There is ATV activity in the 432-434 MHz area right now here in the Bay Area. There's been an on-going battle with ATV QRM on the BBS forwarding backbone.

W6RGG: Also with the DXPSN backbone assignment above 433 MHz.

WA6ZTY: A ham in Marin county rebroadcasts NASA/NOAA stuff 24 hours/day from Dollar Hill. He offset his transmitter from the band plan ATV channel 750 kHz low (video carrier=433.25 MHz.), so that the channel coincided with a cable TV frequency. It was the unknown cause of difficulties with our 433 backbone for many years.

I contacted the trustee last year and when I suggested that the problem was due to violating the band plan, he shrugged it off and suggested that we QSY.

WB6YQP: questioned whether NCPA or NARCC should be band planning.

WB6YRU: The NCPA has been a digital band planner since it's inception in the late 1980's. As far as 70 cm goes... there is no segment for digital now, and that simply isn't right. The segment we've targeted would cause trouble for the fewest number of people. Also, as mentioned, those who would be bothered (ATV at 434) are conflicting with the satellite sub-band anyway... There's no way to make *everyone* happy.

Sep 17, 1999
About ATV at 434 MHz
WB6YRU: N6UOW contacted the ATV guys at Stanford and there was a lot of info posted here on that. They have an input at 434, but it's hardly used and they admit this overlaps with the satellite segment of 435-438

Mike WA6ZTY has provided information about that ATV signal from Marin county. Apparently that guy is on his own and doesn't care about band plans.

And I have contacted ATV people around here--not much interest from them about this segment.

Most 70 cm packet has already been on 433.x for many years. So, I doubt much will change in practical terms anyway. Besides, what better segment is there for digital? No one has been able to suggest a better alternative.

WB6YRU: The NCPA annual general meeting will be in the Sunvalley room at

3 PM on Sunday, Oct 17, 1999. (Pacificon will be at the Sheraton hotel in Concord Oct 15-17.)

WB9LOZ questions if there is ATV at Diablo on 434 MHz

Sep 18, 1999
KC6SXC (W6YX sysop): Black Mountain is still on the air, and W6YX (Stanford ARC) has been the trustee for a couple of years now, ever since WF6R joined the club. see the web page at http://www-w6yx.stanford.edu /~stevem/atv

KE6FSE: Mt Diablo ARC's Input is on 1.2 gig, and the outputs are 427.25 and another freq on 1.2 gig

Sep 20, 1999
WB6YRU: NCPA will meet with NARCC at Pacificon Sunday at 9 AM. John Ronan K3ZJJ (NARCC pres.) is calling it "the SMC working group" meeting. Basically, the idea is to build bridges and work toward some kind of agreement/understanding in regards to band planning.

N6FRI: About the 427.25 Mt Diablo ARC television... Those emissions fall outside the repeater and auxiliary sub-band. The ATV repeater color burst and separate aural transmitter carrier are in the 431 - 433 sub-band specifically the 431.750 aural carrier.

WB6YRU: The 1998 Repeater Directory lists 426-432 as just "ATV simplex." Part 97.205 says repeaters are not allowed at 431.0-433.0 and 435.0-438.0 MHz. This apparently means the ATV repeater at Black Mountain is not in compliance with FCC rules! This also brings up an interesting point: if we recognized ATV there (433-439), we'd be going along with a band plan that is partially contrary to part 97. So, now we have two very good reasons for ignoring ATV there: 1) satellite sub-band at 435-438, 2) FCC 97.205.

KC6SXC: The ATV repeater has multiple inputs, and one output - on 2.4Ghz.. who cares if there is a repeater

listening on 434, as long as it's not transmitting there..

WB6YRU: Apparently the FCC cares... Part 97.205 specifically says repeater *inputs* as well as outputs are not allowed in those sub-bands. The repeater might not be transmitting there, but users would be.

Sep 27, 1999
WB6YRU: The NCPA mailing address is changing to:
NCPA
PO Box K
Sunnyvale CA 94087
Thanks Howard N6HM.

Sep 29, 1999
N6RFI: I have not heard there was a problem between the terrestrial users and the folks pointed toward the birds. Are you aware of any real issues?

KE6I: There is a problem here that I've heard of. I talked to some guy who works AO27, and he does this by driving back over the Berkeley hills to Orinda, where he doesn't get any interference from an ATV station on 434 MHz -- somewhere around here.

WB6YRU: Even without this example, lack of "known" complaints should not matter. We certainly don't want to say it's "OK" unless or until the satellite folks get so bothered that they track the source down and complain!

N6FRI: Mentions the NFCC wouldn't let NCPA join (implying we shouldn't do band planning or coordinating).

WB6YRU: NFCC membership requirement is merely that you be listed in the 1995-1996 Repeater Directory..Not much of a qualification. Since we aren't involved with repeaters, we never worried much about being in the R.D.

Discussion follows about rules interpretation regarding what constitutes "frequency Coordinator" and the definition of Auxiliary and digital stations.

Oct 10, 1999
WB6YRU: Gives list of packet usage at 70 cm (was compiled from different sources over the years). Most of it is at 433 MHz.

Oct 12, 1999
WB6YRU: Post cards were just sent out mentioning the general meeting with a couple of agenda items, the new PO Box (thanks Howard), and something about the fact that some people reported not receiving the last Downlink (with an offer to send another one). I would think post cards should be able to make it around northern CA within the next two or three days.

Oct 21, 1999
WB6YRU on NCPA-NARCC meeting at Pacificon
Half of it was comparing past problems, grievances, and rumors with the idea of establishing where each of us was coming from. We all agreed that we need to work together on the issue of band planning--that was the main thing. John seemed stuck on the idea that NARCC should host the spectrum management group, but the consensus was that's not a good idea--no one organization should dominate it.

I also learned that this new digital segment at 433.x isn't new after all! Apparently it was agreed to be digital 12 years ago, but that history somehow was forgotten. It's interesting that we came up with the exact same segment again, independently.

Oct 25, 1999
WB6YRU: sent out the minutes of the NCPA general meeting

Oct 27, 1999
WB6YRU: Dave N6UOW and Bob WH6IO were not present at the meeting, but had expressed an interest in running for director--they were elected pending acceptance. They just contacted me to say they accept.

Oct 29, 1999
WB9LOZ: Announces W6PW BBS is going QRT

Nov 10, 1999

WB6YRU: Regarding the old (and forgotten) allocation of digital at 433 MHz, gave list from early copy of the Downlink.

Nov 11, 1999
WA6ZTY: Announced that AA4RE BBS software prior to V2.13t is NOT Y2K ready, it WILL CRASH on Jan. 1st, 2000. I have made the necessary fixed version available, send request to four_re@hotmail.com.

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Keyboard Nodes

Many new hams and many packet returnees ask the same question, where are the digipeaters and nodes? On the keyboard to keyboard frequencies (listed elsewhere in this newsletter) the answer is simple, they come and go. The easiest way to see what is available is to put your receiver/tnc on one frequency and let it sit there for a half an hour. All the active digi's will beacon or transmit during that time and you can capture the call sign.

Nodes do the same. Once you connect to a node, you can just ask it who it has heard in the last half hour or hour. It will tell you and then you can connect to one of the "Heard" stations.

73, Howard, N6HM

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Baker-to-VEGAS Update

This annual 120-mile foot relay race for Law Enforcement running teams is held every April. This was the fifth year that APRS was used to help track runners during the race. This was the first year that the number of teams topped the 200 mark, and more than 30 teams had some type of APRS vehicle tracking support provided by their 'local' ARES or RACES groups. Most of those teams used the same 144.39 National APRS frequency, while a few other teams were

using other frequencies.

Packet groups that are interested in learning more about the race, or about making APRS tracking packages should check out the http://www.baker-to-vegas.org web site for more details.

Dave "Zonker" Harris , N6UOW
zonkerh@corp.webtv.net
or zonker@gnac.com.

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CA APRS Users Group email list.

There is an email list dedicated to APRS in California, linking the groups in the southern part of the state with the north, and discussing the connectivity in between. Regular discussions include info about new DIGIs in service, as well as stations being taken off the air for service. There are also announcements for classes, as well as requests for volunteers for upcoming events (which is a great way for beginners to get more experience, working with folks who have been practicing the digital art for a while). To find out more, you can email Cap Pennell (cap@cruzio.com), or you can subscribe to the list using the info below.
• To subscribe, send email to admin@lists.monterey.edu with only the message: subscribe aprs
• To learn more about this list, send email to admin@lists.monterey.edu with only the message: info aprs
• To upload and download APRS-related files, try the address ftp://ftp.allpen.com/pub/incoming
• More information: Cap cap@cruzio.com or Greg wh6dt@amsat.org

Dave "Zonker" Harris , N6UOW
zonkerh@corp.webtv.net
or zonker@gnac.com.

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Overall Band Plan in Northern California
NCPA 2000

The board voted to recognize band usage, the following is the first draft of that effort. The NCPA still does band planning only for digital. Except for the digital segments, the following was not allocated by the NCPA, it simply is the current usage recognized by the NCPA. At this time, some sections are more tentative than others. Changes may be made at any time as new information comes in.

Notes:
- "Simplex" means FM voice unless otherwise noted.
- In the future, digital may be allocated at 438.0-439.0 MHz, especially duplex with 433.
- In the 33 cm band, Amateur is secondary. SCRRBA (So. CA coordinator) has done a lot of research in the 33 cm band (http://www.scrrba.org/BandPlans/33cmnotes.html). Their plan for 33 cm seems to be a practical way to go and was adopted for the most part.

TEN METERS

```
    | CW           | CW and  | CW & beacon | non FM|
    | Weak Signal  | Digital | Weak Signal | Phone | Satellite |
    |-------------|---------|-------------|-------|-----------|
 28.0            28.075    28.185          28.3   29.3        29.51


    | Repeater | FM      | Repeater |
    | Inputs   | Simplex | Outputs  |
    |----------|---------|----------|
 29.51        29.59     29.61       29.7
```

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

                                              Simplex 53.90
                                                 |
            | Repeater |           | Repeater |           | Repeater |
    | Simplex | Outputs | Simplex | Inputs   | Simplex | Outputs  |
    |---------|----------|---------|----------|---------|----------|
 52.49      52.55      52.99      53.05      53.49     53.54      53.99
```

TWO METERS

```
        144.20 SSB Calling
           |                         | Repeater |
    | Weak Signal | Digital | Satellite | Inputs   | Digital |
    |-------------|---------|-----------|----------|---------|
 144.0           144.3     144.44      144.5      144.9     145.1
```

```
    | Repeater |                                   |  Repeater |
    | Outputs  | Experimental | Digital | Satellite |  Inputs   |
    |----------|--------------|---------|-----------|----------|
145.1       145.5            145.6      145.785     146.0      146.4

        146.52 FM Calling
           |  146.58 Digital
           |  |
    | Simplex | Repeater Outputs | Simplex |  Repeater Outputs  |
    |---------|------------------|---------|-------------------|
146.4      146.6                 147.4     147.6                148.0
```

1.25 METERS

```
    | High Speed Digital (shared) |
    |-----------------------------|
 219.0                        220.0

      222.10 SSB/CW Calling   223.50 FM Calling
          |                        |
    | Weak   | Repeater |          |          | Repeater |
    | Signal | Inputs   | Simplex | Digital | Outputs  |
    |--------|----------|---------|---------|----------|
222.0     222.15      223.39     223.53   223.75      225.0

      222.10 SSB/CW Calling             223.50 FM Calling
          |                                  |
    | Weak   | Repeater |                |  | Repeater |
    | Signal |  Inputs  | Simplex | Digital | Outputs  |
    |--------|----------|---------|---------|----------|
222.0     222.15      223.39     223.53   223.75      225.0
```

70 cm

```
                        432.10 calling
                            |
    | ATV #1 or Exp.         | Weak    |
    | & Control links | ATV #2 | Signal | Digital |Misc | Satellite |
    |-----------------|--------|--------|---------|-----|-----------|
420.0              426.0    432.0    433.0      434.0 435.0        438.0

                   441.0 Simplex        446.0 Simplex Calling
                       | 441.5 Digital       | 446.5 Simplex
          | Aux. |     |    |                |    |
      Misc | Links | Repeater Outputs | Repeater Inputs |
    |------|-------|------------------|-----------------|
438.0   439.0    440.0               445.0             450.0
```

33 cm

```
         902.1 calling
            |
    | Weak   | Repeater Inputs        |Misc. &  |
    | Signal | shared with Weak Signal |Simplex | Digital |
    |--------|-------------------------|---------|---------|
902.0     902.1                       903.0    912.0     912.2
```

```
| ATV Simplex or    |            |Misc &  |          | Repeater |
| ATV Repeater Input | Digital   |Simplex | Digital  | Outputs  |
|--------------------|---------|-------|---------|----------|
912.2                       917.9    918.0   927.0      927.1      928.0
```

23 cm

```
            | Duplex Digital |                     | Duplex Digital |
| ATV #1 | and NBFM p-p  | Digital | ATV #2 | and NBFM p-p   |
|--------|----------------|---------|--------|----------------|
1240.0    1246.0            1248.0    1252.0   1258.0           1260.0
```

```
            | Repeater |          | Repeater | Wideband Exp. |
| Satellite | Inputs  | ATV #3 | Outputs  | and simp ATV  |
|-----------|----------|--------|----------|---------------|
1260.0        1270.0     1276.0   1282.0     1288.0          1294.0
```

```
   1294.5 FM Calling
        |          1296.1 Calling
        |             |
   | Simplex | Weak Signal | Digital |
   |---------|-------------|---------|
1294.0     1295.0        1297.0    1300.0
```

13 cm

```
                        2304.1 Calling
                              |
   |High speed |          | Mixed | Weak  | Mixed |         | Mixed |
   | Digital   |Digital | Mode  | Signal | Mode  | Beacon | Mode  |
   |-----------|--------|---- --|--------|-------|--------|-------|
2300.0        2303.0   2303.8  2303.9  2304.2  2304.3   2304.4  2304.5
```

```
                        2305.2 FM Calling
                              |
   |Translator |Translator |       |        | Repeater |Control |
   | Input     | Output   |Beacon |Simplex | Input   | & Aux. |
   |-----------|----------|---- --|--------|----------|--------|
2304.5        2304.7      2304.9  2305.0   2306.0      2309.0   2310.0
```

```
         |High speed |          |Control |      | High speed |
   | ATV |Digital   |Digital | & Aux. | Sat. | Satellite  | Sat. |
   |-----|-----------|--------|--------|------|------------|------|
2390  2396.0       2399.0   2399.5   2400.0 2403.0        2408.0 2410.0
```

```
   |Repeater |High speed |        |      |High speed |Wideband FM,   |
   |Outputs  | Digital   | ATV | Sat. | Satellite |FMTV, SS, Exp.|
   |---------|-----------|------|------|-----------|--------------|
2410.0      2413.0       2418.0 2430.0 2433.0      2438.0          2450.0
```

SHF

```
3456.3 - 3456.4 MHz     Weak Signal (Beacons)

5760.3 - 5760.4 MHz     Weak Signal (Beacons)

10.3681 MHz             Simplex (Calling)
10368.3 - 10368.4 Ghz   Weak Signal (Beacons)
```

Northern California Packet Band Plan
November 1999

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, Gilory (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.
• 222.14 was recognized as weak signal and the existing DX spotting stations moved to 223.68 on March 7, 1999. At the same time, 223.68 was changed to DX Backbone.

440 MHz

433.05 TCP/IP backbone (100 kHz)
433.15 BBS backbone (100 kHz)
433.25 DX Spotting backbone (100 kHz)
433.31 - 433.35 (20 kHz channels non-specific at this time)
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, 433.53 (20 kHz channels non-specific at this time)
433.55 BBS LAN
433.51 - 434.0 (20 kHz channels non-specific at this time)
441.50 Any

NOTES:
• Channel allocation in this band is currently under review.
• There is a possibility of duplex channels being assigned in the future (probably 433.x/438.x MHz). Comments are welcome.

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.

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

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.

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.

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. As with face-to-face board meetings, interested persons are welcome. Subscribe to the remailer by sending e-mail to majordomo@qth.net with "subscribe ncpa" as the message. Subscribing to the remailer is like attending a continuous NCPA board meeting.

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 61716
Sunnyvale CA 94088-1761

First Class