



Publication of the  
Northern California  
Contest Club



#605 – December 2002

## NCCC – 52 years of contesting excellence

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**NCCC ZOOM MEETINGS**  
<https://nccc.cc/meetings.html>

#### Next Meeting

Tuesday 13 December  
Open Chat 6 PM  
Meeting: 6:30 PM – 8:30 PM

#### ***“Light-hearted Holiday Presentation”***

John Miller, K6MM

### President's Report

**David Jaffe - WD6T**



As we flip the calendar over to 2023, we find ourselves closing in on the solar maximum of cycle 25, predicted to be the easy-to-remember year 2025. We have already seen the centroid of daytime contest activity shifting upwards from 20 meters to 15 meters, and beginning to flirt with 10 meters. Meanwhile, both 80 and 160 meters are a tougher slog than they've been in the recent past. As Joni Mitchell might have sung,

*“I've looked at Sol from both sides now, from peak and trough, and still somehow it's Sol's illusions I recall, I really don't know Sol at all.”*

As mentioned in the last issue, our October picnic was a resounding success, the first in-person meeting in several years. That begs the question, “When will we meet in person again?” There are several complications to answering that question.

First of all, while many of us are feeling more relaxed about Covid, the disease is still circulating and some of our older members are still wary of indoor meetings. Given rising Covid cases in several Bay Area Counties, this is not an unfounded concern. Therefore, well-ventilated and/or outdoor venues are preferred, though that is a challenge in winter.

Secondly, many of the places where we have traditionally met are no longer in existence. If anyone knows of a suitable venue, especially on



the Peninsula, please contact me or our Secretary with the details.

Finally, there is the perennial challenge of finding a suitable contest-free weekend in the heart of the contest season. While we could meet on a weeknight, this will affect attendance, as non-locals may not be willing to spend several hours in rush hour traffic. It remains a goal to get back to in-person meetings as soon as it's safe to do so and the ducks can be made to line up in the right configuration.

Meanwhile, for December, we are again meeting on Zoom, with a presentation by our own John K6MM entitled, "Ham Radio, The Lighter Side. Why We Do What We Do," appropriate for the holidays (spouses, etc. are welcome.) Perhaps next year we will revive the tradition of a holiday party, but this time we will have to content ourselves with a hot toddy in front of the Zoom hearth.

### **About NCCC**

#### **Officers/Directors 2022-2023 Contest Season**

President: David Jaffe [WD6T](#)  
Vice-Pres/Contest Chair: Andy Faber [AE6Y](#)  
Secretary: Greg Alameda [KK6PXT](#)  
Treasurer: David West [W6DMW](#)  
Past President: Jack Brindle [W6FB](#)  
Director: Bob Cox [K3EST](#)  
Director: Chris Tate [N6WM](#)  
Director: Ed Radlo [AJ6V](#)

#### **Volunteers**

Charter Member: Rusty Epps [W6OAT](#)  
Awards Chair: Gary Johnson [NA6O](#)  
Calif. QSO Party Chair: Dean Wood [N6DE](#)  
QSL Managers:  
[K6ZM](#): vacant  
[K6CQP/N6CQP/W6CQP](#): Ed Muns [W0YX](#)  
NAQP Teams: Fred Jensen [K6DGW](#)  
NA CW Sprint Teams: Bob Vallio [W6RGG](#)  
NCCC Email List Admin: Phil Verinsky [W6PK](#)  
WACC Award: Fred Jensen [K6DGW](#)

#### **NCCC Thursday Night Contesting**

NCCC Sprint: Tom Hutton [N3ZZ](#)  
NS CW Ladder: Bill Haddon [N6ZFO](#)  
NS RTTY Sprint/Ladder: Ed Radlo [AJ6V](#)

#### **Communications**

Webmaster: John Miller [K6MM](#)  
Webinars: Bill Fehring [W9KKN](#)  
Membership:  
Gary Johnson [NA6O](#)  
Ian Parker [W6TCP](#)

#### **JUG Editor**

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And don't forget that the turn of the year means it's time to clear the cobwebs out of your RTTY engine in preparation for the first big contest of 2023, the ARRL RTTY Roundup. Don't wait until the hour before the contest. That trick never works. The contest is now RTTY-only, so there will be no multiple mode decisions to eclipse the One True Diddle. And with 10 meters in play, it should be a grand five-band affair. Happy New Year and may the propagation be with you! -30-

### **Vice President/ Contest Chair Report** **Andy Faber, AE6Y**

#### **A Retrospective on Contest Rigs From 1997**

I thought our members might be interested in a report on the Club's July 1997 meeting, the purpose of which was to see and evaluate new contesting rigs from the big Three JA manufacturers. Notably, there were no American entries, as Ten-Tec was declining, and Elecraft hadn't yet been born.

Here's how I described the meeting at the time:

"The July meeting was a great success. Titled 'Yen and the Art of Contest Rig Selection,' it featured a rig comparison of four radios of interest to contesters: the Yaesu FT1000MP and FT920, Kenwood TS950SDX and Icom 756. Thanks to all who helped out, including N6TV, who brought one of his two new MP's, Chuck, NF6S, for the 920, Ken Silverman, K2KW, for the 756 and yours truly who lugged the 950 to the meeting (it may qualify in terms of weight as a solid-state boat anchor, hi). Special thanks to Chuck, who not only arranged the site in Livermore, but also ordered and bought the pizza, moved the



tables around, strung the coax, brought his FT920 (which he had to make heroic efforts with Yaesu to get it back from their repair facility the afternoon of the meeting)--and at the end of the meeting while everyone else was hanging around looking at the radios and chatting, Chuck and Don (W6OA, who also helped, and who brought the pizzas) were busy vacuuming the council chambers!"

"My analysis of the state of the art: it's very interesting that the manufacturers keep increasing the digital signal processing component of the radios, but don't quite have the horsepower to do it economically at reasonable IF frequencies (e.g., the MP does 4th IF filtering at a frequency in the audio range, 19kHz). It's also noteworthy that Kenwood and Icom are generally experimenting with DSP in their mid-line radios, not their top-of-the-line units. This suggests that unless you just gotta have the newest and the best, it might make sense to allow the experimentation to go on for another year or two before committing to a major purchase in an arena of such rapidly changing technology. Although there is a full write-up on the meeting elsewhere in this issue, here's my short take on the four radios."

**"FT1000MP:** Probably the contester's best choice for a fixed station radio. After all, can VP/CC N6TV possibly be wrong in his selection? Actually, three factors suggest that the contest guru may be losing it: first, his admission at the meeting that he overslept and missed the first hour and a half of the IARU contest. Second: the fact that he now is a full-fledged member of the "shack-on-a-belt" crowd. Last, his obsession, bordering on a neurosis, with never using a radio that lacks an instant clear function for the RIT. Nevertheless... It has stereo dual receive, extensive filter selection (unfortunately, virtually all the filters are optional), and modern dsp noise reduction and filtering."

**"TS950SDX:** An older generation rig, but solid, reliable and with most all of the features of the MP at a considerably lower cost (used), excluding only the DSP noise reduction and automatic notch. It also has true stereo dual receive, extensive filtering and many bells and whistles, plus 150 watts of output (the others are 100 watters)."

**"FT920:** Chuck calls it 'one-half an MP' i.e., it has almost all of the features of the MP, but no dual receive. But it has the best DSP and DSP controls yet put on a radio."

**"IC756:** This is a fascinating new rig with a type of CRT display [of course, it was really an LCD display, but not well understood at the time]. Ken thinks the display is great for numeric and alpha information (e.g., menus), but that the panoramic band view feature is not helpful, because it doesn't react instantly and because it needs S-3 signals to register. But he loves it for its portability, light weight, and utility in multi-multi environments." Here's a pome about these rigs:

Gotta (lotta) Yen for a New Rig?

*For the contesting season this fall  
With a new rig you'll sure have a ball.  
The Kenwood is old,  
while Yaesu is bold,  
And Icom weighs nothing at all.*

### **Thinking about WPX:**

It's not too early to be thinking about WPX, which is traditionally a focus contest for the Club, and presumably





will be next year as well. It's a great club contest for a number of reasons, including that it's winnable from here with a lot of multi-home station activity and some contest expeditions. In addition, the cumulative nature of the scoring means that multiple operators can achieve a better score at a good multi than they can by adding up their separate scores at average stations (unlike, say, SS, where that is not possible).

Here's another repeat column – from the JUG for July 2001, with some editorial updating in bold italics. The basic strategy to winning WPX as a club is straightforward and hasn't changed in 20 years:

“At the June meeting, Ed, AJ6V, gave a fascinating presentation on the history of NCCC efforts in major international contests. A super effort led by WA6VEF and N6KT (in a year when W6RGG was club president) culminated in the club's winning CQWW DX in 1981 (followed by a repeat victory two years later). For more details, read Ed's article on the same topic by following the “Club History” link on the web site. And we have won WPX at least six times. The first time in the mid-80's was a new WPX club record of 38 million points! (For reference, the current club record appears to be the Contest Club of Finland's effort last year at 250M points). It's not just better operators, antennas or software; rather, it's clear that WPX has grown enormously in popularity in recent years.”

“Kenny, K2KW, posed an interesting question to me by email prior to the meeting. He wondered if it was a good idea to work up people's enthusiasm for WPX, getting members committed to spending their own money for contest expeditions, if we couldn't go all out and really be triumphant next year.”

“During our discussion of WPX, I posed this question to the assembled multitudes, and the roar came back: Yes, we can do it and it's going to be an exciting experience. There was universal agreement that with a combination of strong efforts from good stations in California, coupled with maximal use of club super-stations abroad, and a substantial effort at expeditioning, we should be able not only to win the contest, but also to break the club record.” *[Note that in 2002, we did break the then-Club record, with 253M points]*

“The discussion on WPX was wide-ranging. We came up with the following principles to win it for the club:”

**“Put on a major effort from good stations in California:** Good scores can be achieved from California. Carl, AI6V, volunteered to be the US station coordinator. Barry, K6ST, volunteered to comb through past results to look for non-NCCC members in our territory who could be signed up.” *[We'll need more volunteers in 2023]*

**“Where appropriate, go up a category, regardless of where that puts you in the standings for that category.** For example, in WPX, single ops can work only 36 hours, but multis can go the full 48 hours. Even with one transmitter, if you can get someone else (who would not otherwise be contributing a score) to share the load, entering multi-single will allow your station to be used 48 hours, with fresher operators, and resulting higher score. Similarly, if a station has the capability to have two transmitters on simultaneously, consider a multi-multi operation, even though it's not competitive against larger multi-multi setups. There was a general consensus that spotting nets aren't helpful in WPX due to high error rate in the spots (and the general availability of multis anyway).”

**“Use rare prefixes.** Consider borrowing someone's 2x1 callsign. My understanding of portable ops is that you can choose any valid prefix. If you are at a modest station, then choose an interesting portable identifier, like W7ABC/KQ6 (though a stronger station might actually have a higher rate



with a simple prefix, as K6LL/7 seems to have every year)”

**“Go all out in SSB.** If you can devote only one weekend to WPX, there are many more points to be had in the SSB contest at the end of March than in the CW version at the end of May. For example, using 2000 published results, the median SOAB HP score worldwide was 10M in SSB and 6M in CW (for the U.S.A., it was 8M versus 4M). For multi-multis the difference was even more striking: the median of the top 5 M/M’s worldwide was 43M on SSB and 14M on CW.”

**“Maximize efforts from overseas contest stations.”** [*Well, ZF2NT and HC8N are no longer QRV, but PJ4K and P40L/P49Y exist*]

**“Encourage members to go on special expeditions for the contest.** A major contribution to the club score has to come from ad hoc expeditions. There are lots of QTH’s now available. See K2KW’s web site [www.dxholiday.com](http://www.dxholiday.com) for details.” [*Unfortunately, no longer available – is there any replacement?*]

**“Design an awards program to encourage participation.** Carl, AI6V, Steve, K6AW, and your's truly will work on that program. [*Anyone have good ideas for this?*]

**“Start a list of pledges and expeditions.** We’ll start this at the next meeting. For myself, I made about 6M points from home this year. After looking at the various published results, I believe that if I operated from a decent expedition station SOHP I could reasonably make 15M in the two modes combined. I need to think about this some more, but I’m inclined to sign up at that level, then arrange my calendar to make the time available to put in that kind of effort next year.” [*Actually, in 2002, I operated WPX SSB from N6NT’s station as ZF2AF, and CW from AI6V’s station as P40Y, making about 24M points and winning the award given for the highest combined SSB and CW scores -- these were my first ever DX-peditions, and John, W6LD, and I bought the P40V site from Carl the next year*]

*We’ll need an overall WPX coordinator and perhaps an expedition coordinator*

### **Other Focus Contests:**

In addition to WPX, don’t forget two contests coming soon: ARRL 10m on Dec. 10-11 (maybe already past depending on publication dates), and ARRL RTTY Roundup, Jan. 7-8. We’ll be flogging those contests separately (N6WM is already doing so for ARRL 10m), so be sure to sign up and contribute to a winning club score. -30-

## **Correspondence**

### **Tom, K5RC**

We just added our 20th SS Division Plaque to our “Walls of Fame”. They are since 2008 for N6TV (CW) and WX5S (Phone). Not sure many other clubs can boast this feat from one station. Also included is our “QSL Door of Fame”. I could not figure out how to display my 374 confirmed countries but to shrink the QSL’s to 1/3 size. Look closely and you can also spot WK6I’s Twisted Chicken donning the wall.



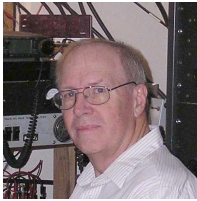




## Tube of the Month

**Norm Wilson, N6JV**

**[Visit the Tube Museum at N6JV.com]**



At the beginning of WWII, the British had deployed their early warning RADAR that would prove so useful in the "Battle of Britain". Some military officers didn't think that the Germans had working RADAR. They became suspicious when one of their bomber squadrons was ambushed by German fighters while out at sea resulting in very heavy losses. The British scientists finally received information that indicated that the Germans had advanced RADAR and the allies had little knowledge about its capabilities. Intercepted messages referred to something called "Freya" and another named "Würzburg" that seemed to indicate RADAR systems. A reconnaissance Spitfire got a photo of something suspicious on the French coast. It looked like a 10-foot diameter dish on a trailer, and was suspected to be a Würzburg unit. It was relatively close to England and the military wanted it.

A beach landing would be very difficult and would give the RADAR crew a chance to escape so the Chiefs of Staff ordered Operation Biting. A company of the British 1<sup>st</sup> Airborne Division parachuted into France in late February, 1942 near Bruneval, France, hence the common name for the operation, The Bruneval Raid. The raid was a big success with low casualties and the RADAR plus a German technician were bagged.

The results of the reverse engineering of the RADAR are available today. The amplifier tube was a Telefunken [LS180](#) (left) in a simple oscillator circuit at around 500 MHz. The oscillator had a pulsed output of about 10 KW using a 12 KV supply. The filament was 6.2 volts at 15 amps. Pairs of grid and plate pins minimize the lead inductance and maximized the upper frequency.

The aiming accuracy of the system was about 2 degrees in azimuth and 3 degrees in elevation. The Würzburg was designed to be short range and useful in directing anti-aircraft guns while the Freya was used for long range warning. All the German anti-aircraft systems were configured to display IFF (Identification Friend or Foe) signals from their own aircraft. At night, the RADAR directed night fighters to their bomber targets. The Würzburg was not particularly accurate and the British developed counter measures to fool it. One jamming system made a British bomber look like three. Later in the War, a Würzburg with a larger antenna was deployed to protect high value targets like the V2 rocket works at Peenemünde. Others were deployed to larger cities to direct flak. The American 8<sup>th</sup> Airforce could attest to



its performance.



The tube in the photo on the left was made in 1944 and indicates that a filament voltage of 6.2 volts was optimum for that tube. It also has Wehrmacht and Luftwaffe inspector marks. The illustration on the right is of a Würzburg in operation. -30-

## Planning Antenna Systems For the Little Gun Station

*Jim Brown, K9YC*

### Part 1



One of the things I've always enjoyed about ham radio is planning and implementing HF antenna systems, both for my own station and for other hams. Our choices are usually limited by real estate, antenna supports that either exist or can be built, the feasibility of putting antennas on those supports, the cost of various options, and what the neighbors (and the XYL) will tolerate. But that's only part of the equation. The other part is how well various options will meet our objectives. This article is about the second part.

With limited space for antennas and with limited supports, the choice often comes down to an all-band vertical or a horizontal dipole (perhaps in an inverted Vee configuration). And if a vertical, should it be ground-mounted or elevated -- perhaps on the roof of a house or garage?

A few summers back, I was re-reading and eventually studying carefully a report by Ward Silver, N0AX, and Steve Morris, K7LXC, on comparative measurements they had done back in 2000 of eight multiband HF verticals that were representative of what was currently available. Most manufacturers were vague about mounting height, so all were set up at 18 inches over an extensive radial system.

The antennas fell into two distinct groups -- those in the first group were base-fed radiators that approximated an electrical quarter wave, with or without loading coils or traps, while those in the second group were some form of center-fed dipole, again with loading or various matching schemes to achieve multi-band operation. The first group required radials, some of which were integral to the antenna, while those in the second group were advertised as not needing radials.

In his report, Ward speculated that vertical dipoles might have been helped by the radial system, but skirted the issue of mounting height. All of which got me thinking -- what about mounting height? And what about radials for a half-wave antenna? I decided to undertake a serious study of these issues by modeling the two fundamental antenna types in NEC, comparing antennas that were ground-mounted over very good radial systems with the same antenna at mounting heights that the average ham might achieve, and I repeated each model for five different soil conditions representative of the wide range hams around the world are faced with. I presented the result of this work to the Pacificon Antenna Forum in October 2013 with the title, "If Can Put My Multi-band HF Vertical on my Roof, Should I?"

When evaluating any system, the first question to ask is, "What do I want to achieve?" In the case of an antenna system, the related questions are; 1) where are the stations I want to work? 2) at what vertical angles do signals to/from those stations most often propagate? 3) how much local noise is present at my QTH, where are the





sources with respect to where I can put my antennas, their directivity, and what is the polarization of the noise? We'll study #1 and #2 first. For domestic contesting from the west coast, a horizontal antenna broadside to about 75 degrees is one good option, and 2-3 elements with that directivity would be even better. And because most of the stations we need to work are in the range of 2,000 - 2,500 miles, good performance at low angles is important.

A domestic contester on the east coast and midwest faces a very different set of challenges. Population density suggests the need for antennas that are less directional in both the horizontal and vertical plane. Given these realities, I chose to plot the vertical patterns of these antennas for the same soil conditions on the same graph, so that the relative differences are clearly shown. We can't change our soil (except by moving to a new QTH), but we can change the antennas we use and how we install them.

### N6BT End-Loaded 1/2 wave Vertical

The first antenna modeled was an interesting design by N6BT -- it's an end-loaded center-fed dipole for 20M. The antenna is shown in the diagram on the right. Most multiband antennas based on center-fed dipoles are shorter than a half wave on 20M, so are loaded in some way to make them resonant. This loaded antenna is very approximately representative of how a typical multiband vertical dipole would behave on 20M.

Fig 2 compares the vertical radiation of this antenna with its base at 3 ft over Average soil (the black curve), with the same antenna at 20 ft and 33 ft. The cursor is on the 33 Ft curve at 10° elevation.

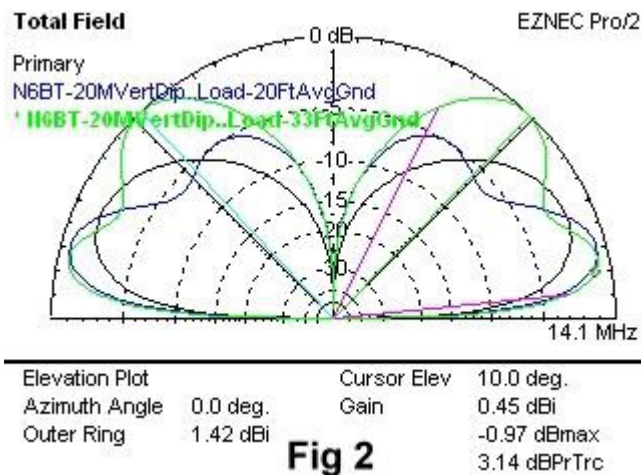


Fig 2

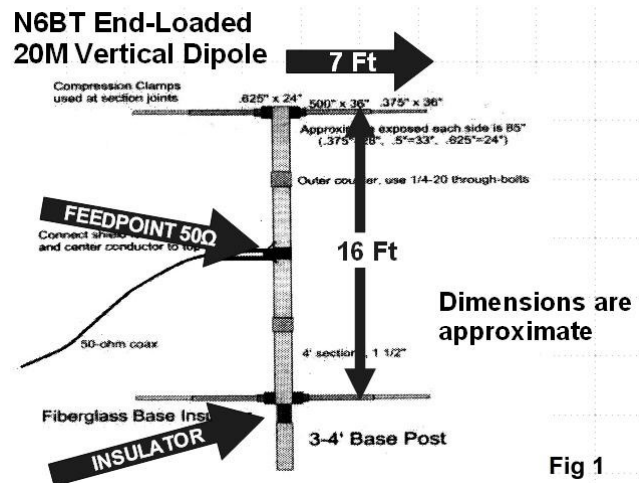


Fig 1

The bottom right readout of "3.14 dB Pr Trc" tells us that the antenna at 33 Ft is 3.14dB better at 10° elevation than the same antenna with its base 3 ft above ground. [Keep this read-out in mind as you study all the plots in this article.]

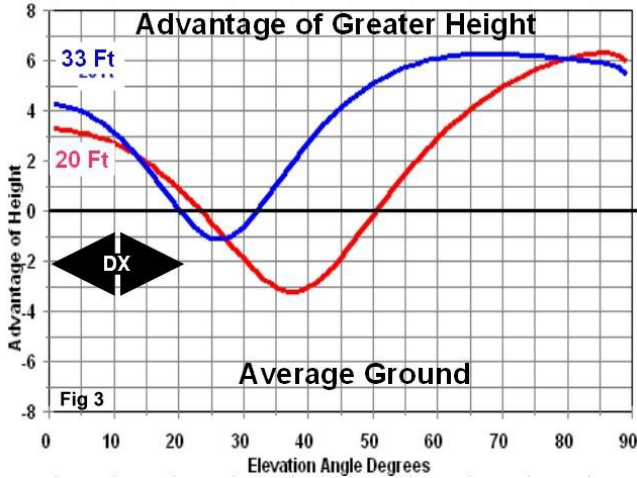
(Figs 4-7 show results of the same analysis for the very poor soil conditions typically present in cities, and the very good soil conditions of Midwest US farm land)

NEC only plots in polar form, which makes it difficult to see the differences between the results at very low angles where the curves appear to be almost on top of each other. I can see these differences in the NEC

display by moving the cursor to various vertical angles, but they don't show up well in the plot. Moving the cursor shows the differences to be significant, but to show them here, I must export NEC's results in tabular form

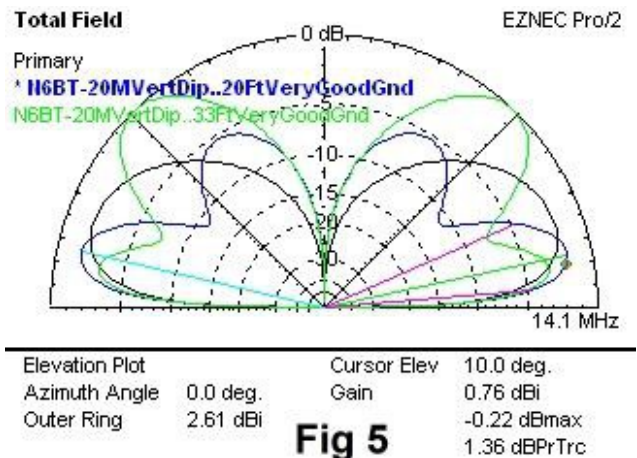
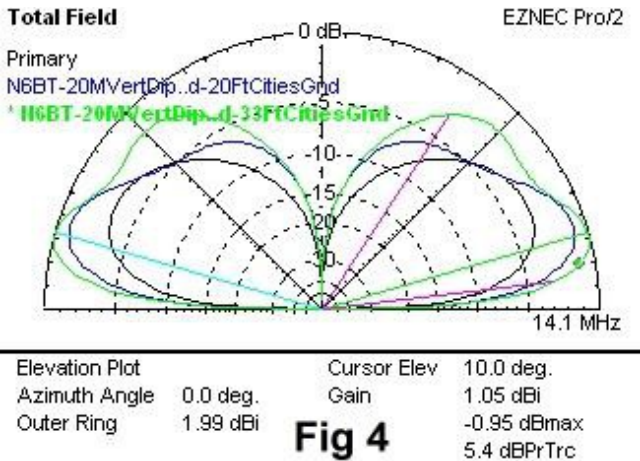


for each modeled condition to a spreadsheet and re-plot them in linear form. Fig 3, 6, and 7 plot the *difference* between the antenna mounted at 20 ft and 33 ft with the antenna at ground level. In other words, they are subtracting the elevated curves from the ground-mounted curve and plotting the difference in dB.



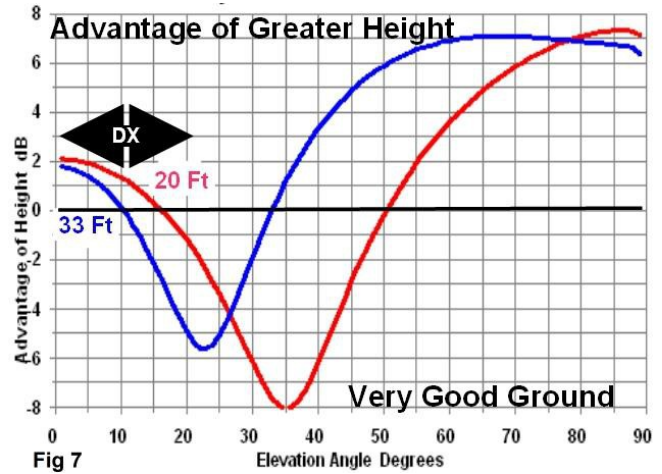
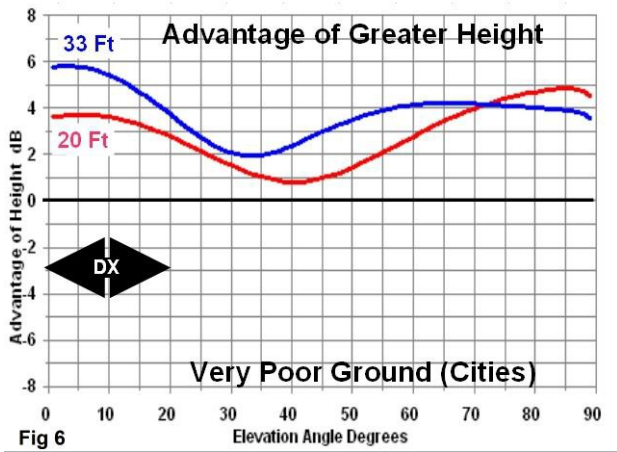
It takes a great deal of additional work to generate these plots, so, although they are useful, I didn't spend the many hours to develop them for the remaining analysis. But do keep these views of the data in mind as we study the conventional polar plots. Virtually all of these modeled conditions follow the trends of this data set -- that is, the advantage of elevating verticals at 10 degrees is maintained all the way down to 1 degree, and in most cases, increases by a dB or so.

Also throughout most of this analysis, we'll use 10 degrees as a general indicator of the contesting and DX performance of an antenna.



We learn several interesting things from these plots. First, for all soil conditions, the low angle performance of this loaded 20M vertical dipole is improved by increased mounting height, and the improvement is greatest for the poorest soil conditions. Indeed, for very poor soil, the higher antenna is the better performer at all wave angles! Second, the vertical pattern breaks down into two lobes, one at low angle and one at an intermediate higher angle. Both the strength of the lobes, and the depth of the dip between the lobes, are most pronounced for the best soil conditions. As I learned from further modeling, the same thing happens with virtually all vertical antennas.





Next, we'll look at a simple quarter-wave vertical under similar conditions. On the ground, it's modeled with 32 radials; at 20 and 33 ft, there are four radials. Both the vertical element and the elevated radials are 3/4-in aluminum. Figs 8, 9, and 10 show that this antenna responds as well to being elevated as does the shortened 20M dipole!

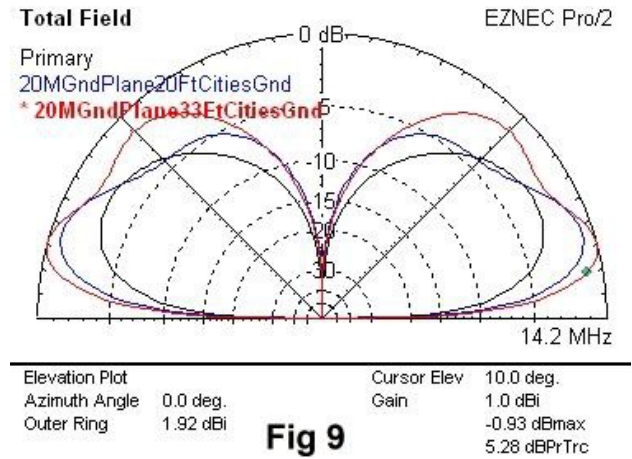
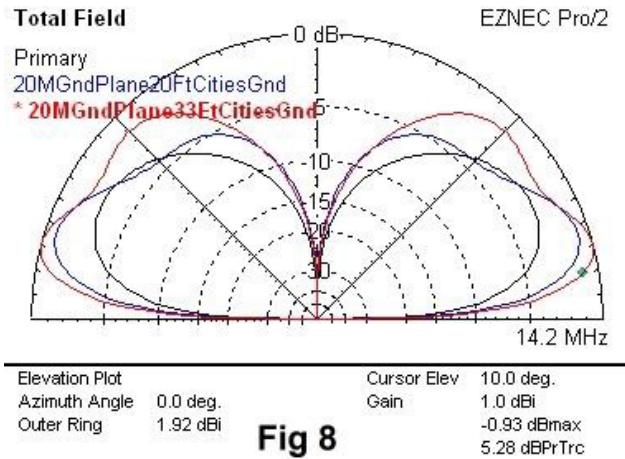
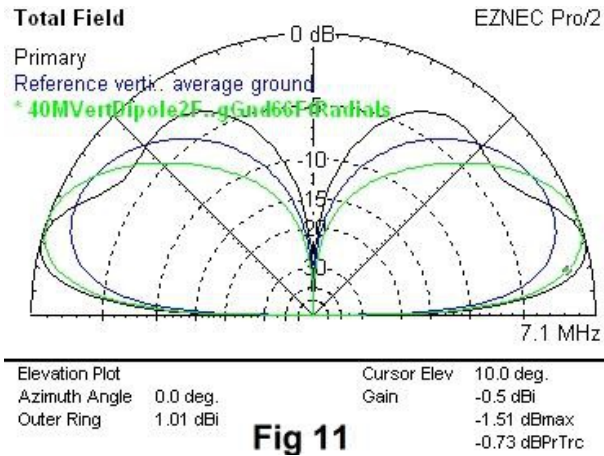


Fig 11 illustrates another important effect of making the vertical radiator longer as a fraction of a wavelength. The rounder, more uniform pattern is the  $\lambda/4$  ground plane; the  $\lambda/2$  pattern is smooth with no lobes, but is "flattened" so that energy is more concentrated at lower angles; and  $5\lambda/8$  vertical has slightly more low angle radiation, but develops both a high and low angle lobes with a mild null between them. As we will learn later, the differences in these patterns are essentially due to their current distribution. Raising the current maxima by a quarter wave increases low angle radiation by a few dB at the expense of a few dB less at higher angles. Adding another  $\lambda/8$  improves both high and lower angles. Vertical radiator heights the range of 180 - 210 electrical degrees are quite popular with major AM broadcast stations.





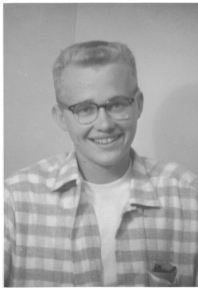
**Fig 11**

From the above, it's quite reasonable to expect the effects of mounting height to be wavelength dependent, so we'll next study how a 40M ground plane at mounting heights of 33 and 45 ft compares to a ground-mounted vertical with 32 radials. Again, we see almost exactly the same effects as before, differing only by degree -- the benefits are greatest for the poorest ground types, less for very good ground, and greater heights with very good ground produces more pronounced lobes and nulls.

*Part 2 continues in the Feb JUG*

-30-

## Editor's Notes



Yep ... the JUG has a new editor. Saraj needed to retire after doing a super great job, I offered myself up to the Club Executives, and they accepted. This is not my first rodeo as a club newsletter editor, but it is the first time for the JUG. I hope I can live up to the high standards set by Saraj, Bill, Ian, and all the former editors.

**IMPORTANT:** Please check your email address books. I changed my email about a year ago to [k6dgwnv@gmail.com](mailto:k6dgwnv@gmail.com) and the old foothill.net address will be disappearing soon. This will assure that I will receive all the cool articles you'll be sending to me.

For the curious: Mom and Dad named me "Frederick," aka "Fred." One of my troopers came from a Navy family and began calling me "Skipper" as we were heading to jump school with the Army Rangers. That morphed very quickly to "Skip," it stuck, and I answer to either. The several other nicknames they gave their Lieutenant are not suitable for use in public.

My apologies to the contributors to this issue ... with it being my first, and the ARRL 10, and some family stuff, I did not have time to get proofs out to you. This can only improve.

*Photo: 1957 Oxford Hall, Berkeley/credit: unk*

-30-

*"Learn from the mistakes of others ... you'll never live long enough to make all of them yourself."*

*Adm Hyman G. Rickover, 1968  
 (and several others)*



## NCCC Membership Information

If you wish to join NCCC, please fill out an application for membership, which will be read and voted upon at our monthly meeting. To join, you must reside within club territory which is defined as everything in California north of the Tehachapi's up to the Oregon state line, and part of northwestern Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles north of Auburn on Highway 49).

## Life Memberships

Life memberships are \$250.00 Contact [secretary.nccc@gmail.com](mailto:secretary.nccc@gmail.com). Members who have reached 80 years of age have and been an NCCC member for 20 or more years are eligible for Honorary Life Membership (“80/20 Rule”). Contact [secretary.nccc@gmail.com](mailto:secretary.nccc@gmail.com)

## JUG Articles Wanted!

I use Apache Open Office templates/macros so the best way to submit material is plain old ASCII text with separate files for photos, diagrams, etc. You can indicate their location in the text by inserting `<filename>` in your text. Indicate desired text formatting with HTML-ish tags such as `<bold>...</bold>`. A selfie the first time you contribute is appreciated. You'll get a proof before publication. The plan is to get the PDF file to John before the monthly meetings. Please do not spend time formatting your submittal, the publication templates will format everything. Send your material to [k6dgwnv@gmail.com](mailto:k6dgwnv@gmail.com) indicating “JUG Submittal” in the subject.

## Northern California Contest Club Reflector—Guidelines


The NCCC email reflector is devoted to the discussion of contesting. Topics include contests, station building, dxpeditions, technical questions, contesting questions, amateur radio equipment wants/sales, score posting, amateur radio meetings/ conventions, and membership achievements. Postings may not include personal attacks, politics, or off-subject posts. Such postings will be considered a violation of the Guidelines

## Find NCCC on Social Media

Facebook: “Northern California Contest Club”

Twitter: “NCCCCKB”




**LANDS' END BUSINESS** 

<https://business.landsend.com/store/nccc/>    MEN   WOMEN   PROMOTIONAL PRODUCTS

Welcome to the NCCC Land's End store. You can choose many different products and add a custom-embroidered NCCC logo.

If you would like to add your name and/or call sign, click the Add Personalization button when designing your garment (\$8 charge, 10 character limit).

If you have questions, contact the NCCC secretary at: [secretary.nccc@gmail.com](mailto:secretary.nccc@gmail.com)



**Northern California Contest Club**

### [NCCC Lands' End Store](#)

We are pleased to announce that the new NCCC Land's End store is online! You can choose from an array of shirts, jackets, and hats and apply your choice of custom-embroidered NCCC logos: A plain one, or one that also says Fifty Years. And, you can personalize your item by adding your name and/or call sign. The store is open 24/7 and items are shipped directly to you. No more waiting for everyone else to make up their minds on a group purchase.

<https://business.landsend.com/store/nccc/> or from the NCCC website: <http://nccc.ccc/members/lestore.html>

Thanks to W6TCP for helping to set this up. Instructions for purchases from Lands' End NCCC Store

1. Go to <https://business.landsend.com/store/nccc/>
2. Click on Men's or Women's link, then choose item(s)
3. Pick color, inter quantity of each size you want to order.
4. Click Apply Logos and Personalizations. This will display the logo choices. Try them out. It will show you what they look like on your chosen fabric color.
5. Select a location for logo (left side, ride side, back, etc)
6. Click Apply Logo.
7. Optionally, click Add Personalization to add your name or call sign (\$8.00, 10 character limit)
8. Click Add to Bag and Continue Shopping or.
9. Start Secure Check out. Account creation and credit card required.





# Northern California Contest Club

Excellence In Amateur Radio Contesting

## K4 HIGH-PERFORMANCE DIRECT SAMPLING SDR



### A direct-sampling SDR you'll love to use

Our new K4 transceiver harnesses advanced signal processing while retaining the best aspects of the K3S and P3. It features a 7" touch display, plus a rich set of dedicated controls. Per-VFO transmit metering makes split mode foolproof. Band-stacking registers and per-receiver settings are versatile and intuitive. Control usage information is just one tap away thanks to a built-in help system.

### Modular, hybrid architecture adapts to your needs

The basic K4 covers 160-6 m, with dual receive on the same or different bands. The K4D adds diversity receive, with a full set of band-pass filters for the second receiver. (Thanks to direct RF sampling, there's no need for crystal filters in either the K4 or K4D.) The K4HD adds a dual superhet module for extreme-signal environments. Any K4 model can be upgraded to the next level, and future enhancements—such as a planned internal VHF/UHF module—can be added as needed.

### Single or dual panadapter, plus a high-resolution tuning aid

The main panadapter can be set up as single or dual. Separate from the main panadapter is our per-receiver mini-pan tuning aid, with a resampled bandwidth as narrow as +/- 1 kHz. You can turn it on by tapping either receiver's S-meter or by tapping on a signal of interest, then easily auto-spot or fine tune to the signal.

### Comprehensive I/O, plus full remote control

The K4's rear panel includes all the analog and digital I/O you'll ever need. All K-line accessories are supported, including amps, ATUs, and our K-Pod controller. The Video output can mirror the K4 screen or display a high-res Panadapter only screen. Via Ethernet, the K4 can be 100% remote controlled from a PC, notebook, tablet, or even another K4, with panadapter data included in all remote displays. Work the world from anywhere—in style!

### K4 KEY FEATURES

Optimized for ease of use

Modular, upgradeable design

7" color screen with touch and mouse control

ATU with 10:1+ range, 3 antenna jacks

Up to 5 receive antenna sources

Full remote control via Ethernet



The K4 interfaces seamlessly with the KPA500 and KPA1500 amplifiers

*'The performance of their products is only eclipsed by their service and support. Truly amazing!'* Joe - W1GO



For complete features and specifications visit [elecraft.com](http://elecraft.com) • 831-763-4211



# Northern California Contest Club

Excellence In Amateur Radio Contesting

# HAM RADIO OUTLET

MULTI-STORE BUYING POWER!

**ICOM**



**IC-9700**  
All Mode Tri-Band Transceiver



**IC-7300**  
HF Transceiver



**IC-7100**  
All Mode Transceiver



**ID-5100A Deluxe**  
VHF/UHF Dual Band Digital Transceiver



**IC-705**  
HF/50/144/430 MHz All Mode Transceiver

**KENWOOD**



**TS-590SG**  
HF/50MHz Transceiver



**TM-D710G**  
2M/440 Dualband



**TM-V71A**  
2M/440 DualBand



**TM-281A**  
2 Mtr Mobile



**TH-D74A**  
2M/220/440 HT

**YAESU**  
The radio



**FT-991A**  
HF/VHF/UHF Transceiver



**FT-891**  
HF+50 MHz All Mode Transceiver



**FTM-300DR**  
C4FM/FM 144/430 MHz Dual Band



**FTM-400XD**  
2M/440 Mobile



**FT-700R**  
C4FM/FM 144/430 Xciv



- RETAIL LOCATIONS - Store hours 10:00AM - 5:30PM - Closed Sunday
- PHONE - Toll-free phone hours 9:30AM - 5:30PM
- ONLINE - WWW.HAMRADIO.COM
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Contact HRO for promotion details. Toll Free including KL7, VE and K9E. Call will be routed to nearest store. All 800-HRO-lines can assist you. If Busy, you may call another number. Prices, specifications and descriptions subject to change without notice.