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Contest Club

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NCCC — 52 years of contesting excellence

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NCCC ZOOM MEETING

FOR DETAILS:

<https://nccc.cc/meetings.html>

Please join us on line via Zoom at:

Date: Tuesday, Aug 16th

Time: Open chat, 6 PM PDST

Meeting: 6:30 PM to 8:30 PM

Open chat after the meeting, too.

Web Meeting Info: For Zoom meeting information, please contact the NCCC Secretary at secretary.nccc@gmail.com

We look forward to seeing you all online!
Greg, KK6PXT — NCCC Secretary”

President's Report - WD6T

QTC DE WD6T

July's NCCC meeting featured W6OAT presenting on the first WRTC (1990). I learned many things. I had assumed that the first WRTC was much like the current ones. Not true. He explained that the structure of the contest was quite different from what has become the standard WRTC format, as it was not piggy-backing on IARU, but rather was a contest unto itself. The duration was shorter, all logging and CW sending was by hand, and individual countries were invited to send representatives, in the style of the Olympics and the Goodwill Games.

Two aspects of the presentation stood out for me:

It was heart-warming to see the way the event brought together contesters on both sides of the so-called "Iron Curtain." The experience clearly was an eye-opener not only for those from the Soviet Union and Eastern Europe, who got a chance to travel to the West for the first time, but also for the Americans who got to spend some quality time with them. The camaraderie was palpable and says a lot about the way that amateur radio brings us together and shows us we are not so different from one another. This is a lesson we should not forget, given the situation in Ukraine, to say nothing of the polarization within our own country. (I got a bit of a taste of such camaraderie, but in the musical realm, when I travelled to communist Poland for the 1989 International Society of Contemporary Music Warsaw Autumn Festival.)



Board of Directors, 2022 - 2023 Contest Season

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- NCCC Thursday Night Contesting - RTTY Sprint and RTTY Ladder: Ed Radio, [AJ6V](#)
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Thursday Night Sprint

The Northern California Contest Club sponsors a Thursday Night Contesting session of thirty minute duration. Often, on Fridays prior to a major contest weekend, a special practice session is held.

Generally, on Thursday evenings, a special format is followed, called NS or "NCCC Sprint". The NS began in the summer of 2004 as a snappy, concise contest occurring most Thursday nights, North America time. The power limit is 100 watts. Occasionally, multi-week ladder competitions are held. See www.ncccsprint.com for details

Thursday Night Contesting Director and Founder
 NCCC CW Sprint
 NCCC RTTY Sprint
 NCCC Sprint Ladder
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 Tom, [N3ZZ](#) (initially Ken [N6RO](#))
 Ed Radlo, [AJ6V](#)
 Bill, [N6ZFO](#)
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[W9RE](#), [K4BAI](#), [N3BB](#), [VE3TY](#), and [WO8H](#))



(Continued from page 1)

My other strong impression was of the prodigious teamwork that went into putting the event together. It involved petitioning the FCC for reciprocal licensing agreements, mobilizing numerous stations, negotiating with various IARU organizations, and on and on. I am in awe of the energy and dedication that K7SS, K3EST and the other organizers devoted to bringing their dream to fruition. It shows what can be done with enough will and elbow grease.

For more info on the 1990 WRTC, please visit <https://wrtc.info/archive/1990-seattle/>.

And NCCC did it again in 1996. For info on the NCCC WRTC incarnation, please visit <https://www.nccc.cc/wrtc.html>.

The August meeting (Tuesday, August 16th) will focus on the WW Digi contest which occurs on the last weekend of the month. WW Digi is the largest digital contest with a novel scoring structure. The presentation will include presentations by Itzok Saje S52D and Jim Varney K6OK. For more info on WW Digi, please visit <https://ww-digi.com/>. In addition Dean N6DE will give an update on the 2022 California QSO Party.

One more item of note: In half a year, my tenure as President of NCCC will come to an end. If you have any interest in running for NCCC office, please contact me; I'd be happy to discuss what's involved.

73,

Dave WD6T (“work Dave six times”)



August 2022 AE6Y VP/CC JUG Column

In this month's column I want to give some reflections on CW contesting, with particular emphasis on the role that is being played in the CW resurgence by the CW Ops club.

NAQP CW

Yesterday was the August NAQP CW contest. This has for many years been one of my favorites. There's a lot to like about the NAQPs. For one thing, they are low power contests, so there seems to be a lot less killer QRM, and particularly on phone less distorted audio than one hears in high power phone contests. For another, the exchange is simply your name and state or province. This makes the contest a very friendly one (particularly on phone, where people greet each other by name). It also helps greatly to allow a QSO to be made when you can barely hear the other party but have already worked them on one or more bands early in the contest. This is particularly helpful when the low bands are noisy at night. And finally, because it is limited to 10 hours for single ops and 12 hours for multi-ops it is long enough to require some strategic thinking about band planning and times off, but not long enough to destroy a whole weekend or turn you into a sleep-deprived zombie following the contest.

The club had very good participation and lots of very fine scores in NAQP CW. Personally, unfortunately we had a dinner commitment, so I was only able to get on for the first part of the contest on the high bands. That was great fun, since 10 was open in its usual spotty way, and 15 seemed to have endless callers. In fact, my hourly rates were 91, 115, and 77 on 10, 15, and 20, respectively. Not sure why 20 didn't play as well as 15, but there was a marked contrast as far as running ability for me on the two bands. So I ended up spending quite a bit of time running on 15 and looking for Qs and mults on 20 on the second radio.

Towards the end of the contest, I experienced one of the strange multiplier abundances that probably can ultimately put down to an anomaly caused by small number statistics. As I was nearing 50 mults on 20, and had 50 on 15, I noted that I had not yet worked OK or TX on 20. The situation with TX was particularly strange, as I ultimately ended up with 8 TX stations on 10 and 13 on 15. But for some reason none on 20. So as I'm running on 15, each time a TX station called in, I had a momentary flash of exultation, quickly dampened as I realized that the caller was on 15, not 20. I was going to switch and start CQing on 20 in the hopes of getting a TX caller there, but since the rate was much lower for running on 20, I was reluctant to do so.

I could have tried to move someone to 20, but I was worried that such a move might not work, and that it would take up more time than it was worth. In fact, I was surprised that in all the second radio tuning around, I did not come across a single move being suggested or in progress. Usually in NAQP moves are common, but the generally good high band conditions may have seemed to make them unnecessary for most guys.

I found an OK, but no luck with TX on the second radio. Then suddenly, when I was just about to have to QRT, I heard Gator, N5RZ, calling CQ on 20. I called several times, but he didn't come back to anyone, so I assumed he was somehow keeping the frequency warm while doing something on another band. But I kept the second radio on him and a few minutes later he was back, we made the QSO, and, finally having worked TX on 20, I turned off the radios for the day. (Continued page 19-21)



N6RO 10/6/80m Tower Upgrade Project Planning

Gary Johnson, NA6O
July, 2022

"Poor performance is the promise of piss-poor planning!" thundered Jim Bradford, my instructor in a project management class in 1982. He was right of course, and as a young engineer at LLNL taking that to heart is something that helped to make me successful in my career. So how does planning pay off on a ham radio tower project? And what kind of plans are the most useful? This report covers my recent experience on a major tower upgrade at the N6RO super station.

Ham radio towers are high-performance engineered structures. They are expensive, require much labor to install, and demand a certain level of care during design, assembly, outfitting, and maintenance in order to keep them safe and to achieve a long service life. We all have stories of backyard towers thrown together with nary a clue by their owner, sometimes with disastrous or even fatal results. A bit of education and planning can make any project go well.

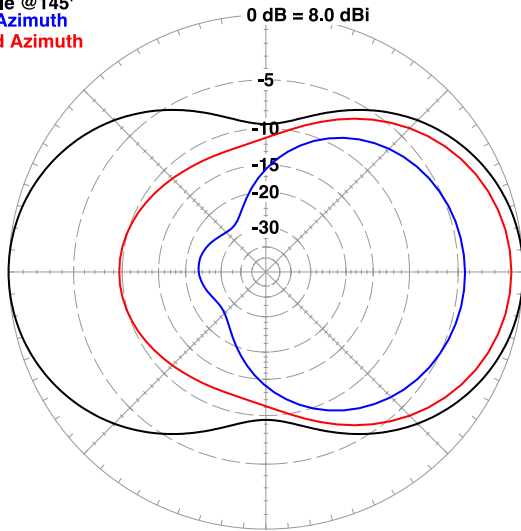
Background

For many years, station owner Ken, N6RO, had wanted to add a high 80m dipole to his arsenal. One might wonder why that would be appealing, considering his existing 80m antennas: A full-sized four-square plus a pair of two-element bidirectional quads, designed by Dean, N6BV. These antennas have served the station well for decades. The four-square is known to perform very well in contests, with low-angle radiation and a decent pattern that helps reject QRM. The quads, with horizontal polarization, were quieter as receive antennas and had good patterns but didn't always compete quite as well. They were also somewhat difficult to tune.

Now consider the simple dipole. When placed at least a half-wavelength above ground, it will provide good low-angle radiation for DX with the benefit of roughly 5-6 dB of additional gain due to ground reflections that you only get with horizontal polarization. In fact, that gain will be superior to the four-square. It will also likely have lower receive noise compared to the four-square — more like the quads. Predicted patterns are shown in Fig. 1. The one disadvantage of a dipole is its lack of a strong azimuthal pattern. But the overall gain and elevation patterns look very encouraging.



Dipole @145'
4sq Azimuth
Quad Azimuth



Dipole @165' Elevation
4sq Elevation
Quad Elevation

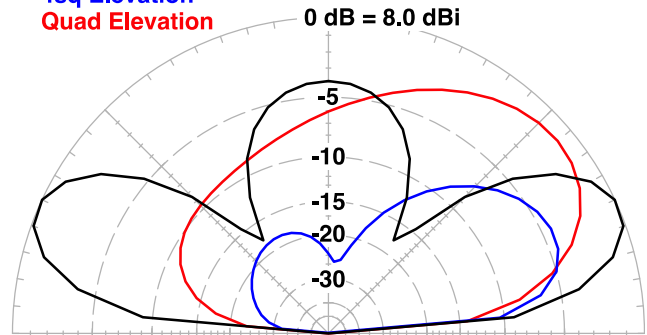


Figure 1. Far-field patterns for the three 80m antennas. Simulated in EZNEC Pro2+ using actual dimensions and specifications of N6RO antennas.

Notionally, the new dipole, a JK Antennas JK-801 (Fig. 2), was to be installed on the existing 10m/6m tower which stood 83 ft tall and was built from Rohn 45G in 2011. It was outfitted with a stack of three 10m Yagis plus a 6m LFA and a 6m loop antenna. All of those antennas were to be reinstalled after extending the tower to a height more suitable for the dipole: 133 ft, plus a mast extending another 13 ft. As a bonus, that tower is located on a small hill, effectively placing the new dipole an additional 20 ft above average terrain... Nearly 165 ft up. That is definitely a good working height.

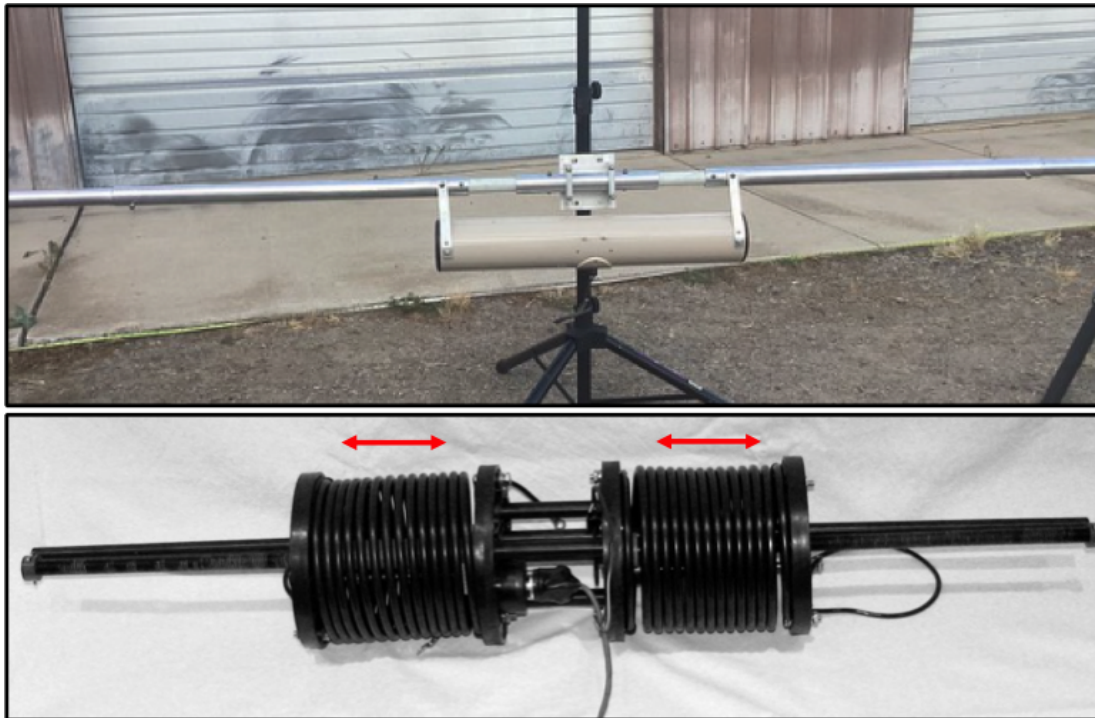


Figure 2. The JK-801 80m dipole (top) uses a Tornado Tuner (bottom) to cover the entire band. A small DC motor compresses the loading coils to vary inductance.

Let the Planning Begin

We started by discussing the objectives and various tradeoffs, focusing on antenna types and heights. The dipole was the primary new antenna and drove the specification for ultimate tower height. Existing antennas were all to be reused, with the addition of one more small 6m Yagi. Exact heights are influenced by the location of guy wires, but there is some flexibility. Next, we looked at various options for coaxial feedlines, switching, and control cabling. There is a single 7/8-inch heliax cable feeding the entire tower (200 ft from the shack), with a remote-operated antenna switch. An additional run of coax was needed for 80m. We use a stack match for 10m, and the various 6m antennas are individually selectable. While there are many ways it could have been done, this simple architecture leveraged existing equipment, cabling, and controls, and considered station operating style. Experience with failures of stack match relays drove us to install that device at the bottom of the tower. Predicting maintenance problems is worthwhile at this stage of planning.

Simulation should be part of your initial planning. Radiation patterns as shown above are produced by electromagnetic simulators such as NEC and are indispensable for comparisons and when developing homebrew antennas and special arrays. Another tool is High-Frequency Terrain Assessment (HFTA), available free through ARRL and included with their Antenna Handbook. HFTA generates the vertical radiation pattern of horizontally polarized antennas taking into account the profile of the surrounding terrain. It's useful for optimizing antenna height. Note that it does not work with vertically polarized antennas.



An under-appreciated factor in preliminary design is **equipment availability**. At the time of this project, there were global supply chain problems and prices were rising fast. You can't assume that your favorite selection will be delivered on time (or at all), let alone at a fair price. We teamed up on the online shopping and phone calls to locate all the hardware. Friends in NCCC and local clubs also helped out. Our tower climber, Hector, XE2K/AD6D, had some tower sections and other hardware for sale as well. Coordinating with his schedule was also a very important factor. Hector is about the only fully-qualified ham tower worker in our region and only makes a couple of trips up here each year. So it was even more important that all items arrived on time.

This leads us to the **Parts List** (Fig. 3), one of the easiest planning tools. Use a spreadsheet to list every item in the project, even the smallest. Show the quantity, manufacturer, part number, supplier, cost, and delivery status. You'll start with the big, obvious things like tower sections, antennas, rotators and so forth. But don't skip those tiny parts like nuts and bolts that can bring you to a (very expensive) halt with the climber up the tower. Keep your list constantly updated and shared with others on the project. *Google Sheets* is one way to do live sharing.

Description	Mfg	P/N	Source	Quan.	Cost ea	Cost ext.	Status
80m dipole	JK	JK801	JK Antennas	1	\$ 2,639.00	\$ 2,639.00	
Rotator controller, for Tornado	Green Herron	RT-21DC	JK Antennas	1	\$ 449.00	\$ 449.00	
Rotator	AlphaRadio	Big-RAK	DX Shop (UK)	1	\$ 1,000.00	\$ 1,000.00	
Rotator controller	Green Herron	RT-21	Green Herron	1	\$ 599.00	\$ 599.00	

Figure 3. The parts list keeps track of every item.

When all those parts start arriving, do a careful **inspection** of each package. Count all the parts! We were caught short once simply because the supplier didn't quite fill the order. Here's an old saying: "You don't get what you EXpect, you get what you INspect."

Drawings and Mechanical Design

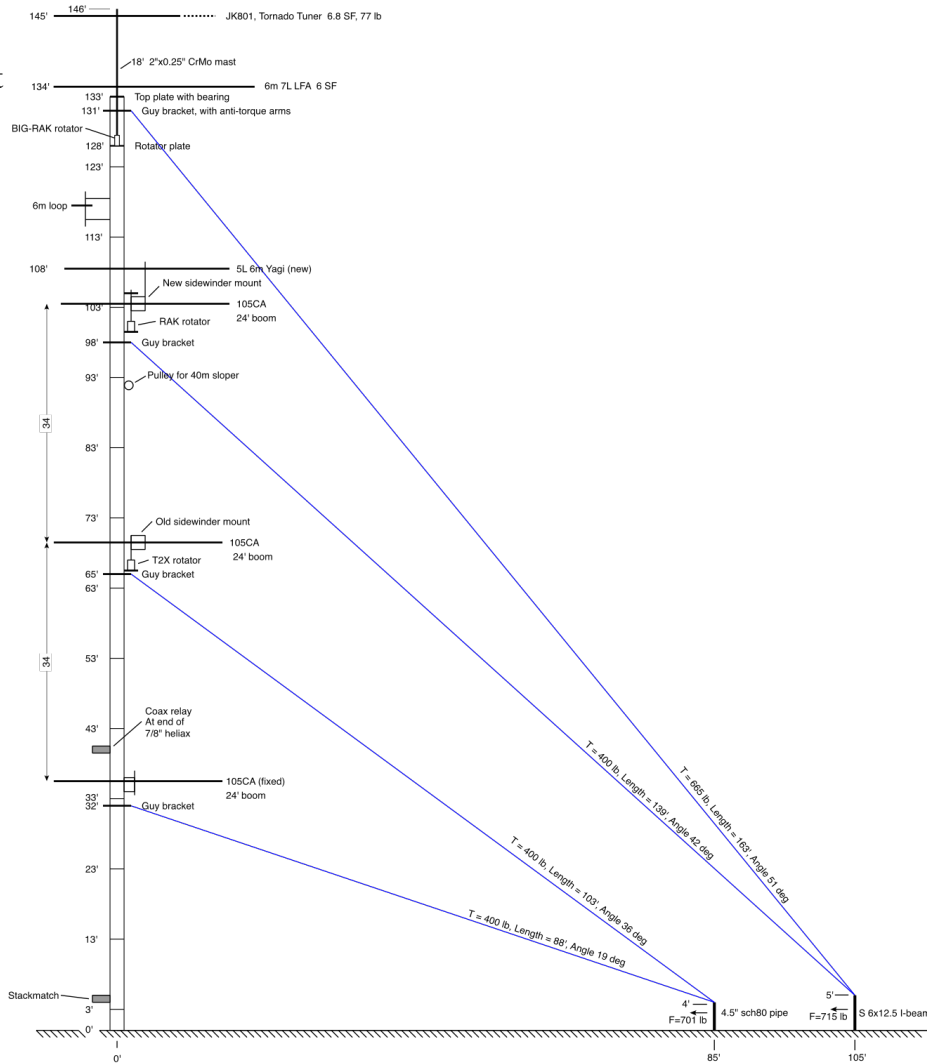
A **scaled drawing** of the tower and antenna design is very useful.

- It clearly identifies each component and its location.
- Your tower contractor and all team members will understand exactly what is planned.
- You can look for interference with the guy wires or other elements of your plan.
- It helps you inventory the required hardware.
- You can obtain cable lengths with good accuracy, allowing you to prefabricate them.

Even a pencil sketch on grid paper is helpful, but in our modern age it's reasonable to use a CAD or other drawing program on a computer. Fig. 4 shows the elevation drawing for the N6RO project. All drawings are stored in a folder on Dropbox for ready access at the station and other locations.



To mount an antenna anywhere but need special use swing-sidewinder are like a with the mounted on While it the full 360 rotation, it's easy to fixed- are also used one of Another rotator such from TIC are fairly expensive are able to arrays. You to work with contractor on mounts.



antenna at the top, you'll hardware. We arm or so-called mounts, which swinging gate antenna top (Fig. 6). doesn't cover degrees of affordable and install. Arms for direction Yagis popular and we those as well. option is a ring as the ones General. These heavy and contraptions but handle large definitely need your tower these special

Figure 4. Tower elevation. This scaled drawing is the foundation of the entire project.

As I mentioned, towers are high-performance mechanical structures. Manufacturers supply clear instructions on how their tower products must be installed and how much load they will support. You must understand and follow these specifications. Before you do anything, be sure to get up to speed on recommended practices in tower work. I can recommend two books: *Up the Tower* by K7LXC [ref 1] and *Antenna Towers for Radio Amateurs* by K4ZA [ref 2]. We used the Rohn 45G guying specifications for heights and tensile strengths of the guys. To reduce interaction with antennas, upper parts of each guy are Phillystran, a Kevlar-based material, while the lower parts are the usual extra-high strength (EHS) steel wire for fire and abuse resistance.



One challenge on the N6RO property is that it's covered by a working vineyard, and tractors are driven around regularly. For that reason, the guy anchors are elevated. A couple of new anchors were needed, so I did a structural analysis to determine the size of an I-beam that would support the full tension of a set of guys, and also chose a conservative reinforced concrete base design (Fig. 5). Most hams should consult a qualified engineer to come up with a safe design for such anchors, if not using the manufacturer's standard design.



Figure 5. New guy anchors have a substantial rebar cage in the base and use galvanized I-beams that are designed to handle the full load with a large safety factor.

Another critical element of any tower design is the **mast**. Hams are famous for overloading their masts, and there are plenty of photos of masts that failed in high winds. The DX Engineering website has a simple Mast Load Estimator [Ref. 3] where you enter the heights and projected wind areas of each antenna, and it estimates the maximum safe wind speed. It's a real eye-opener. Luckily, this station is in a pretty benign area in terms of wind speed, but we still designed for 90 MPH.



Figure 6. A swing-arm mount supporting two antennas. This one is fabricated from aluminum by Robin, K4IDC.

Cable Design and Fabrication

Decades of experience as an R&D engineer showed me just how important the cable system is on any project. The more "stuff" you have on your tower, the more cables and connectors you will need, and with complexity comes additional risk of failure. Here are some rules for success.

- Design your cables early, before buying materials or starting fabrication.
- Whenever possible, preassemble and test all cables in the shop rather than the field. A clean bench, proper tools, good lighting, and test equipment are needed.
- Choose the best materials. That means high-quality connectors such as Amphenol, and outdoor-rated cable which preferably will have a polyethylene jacket.

Antenna	FROM	TO	Length	Cable Type	New?	Loss	@MHz	Notes
80 Dipole @145'	Ant feed	Tower top	28	400MAX	Y	0.08	4	Ant pigtail, rotator loop
	Tower top	shack	350	LMR400	Y	0.9	4	
	Tornado	Tower top	28	4/c rotator	Y			Tornado pigtail, rotator loop
BIG-RAK @129'	Tower top	Term box @3'	132	4/c rotator	Y			
		Term box @3'	130	4/c rotator	Y			
6m LFA @134'	Ant feed	Tower top	8	BuryFlex	N	0.07	50	Ant pigtail, rotator loop
	Tower top	Coax relay @36'	105	LMR600UF	Y	0.9	50	Cable is 125 ft. N conn



- When reusing old cable, thoroughly inspect and test it. Replace degraded connectors.
- Label each end with To/From. I use a Brother labeler with their Flexible PZ tape, which sticks to itself and stays in place even on small cables. It lasts many years in the sun.
- Cover all connectors before hauling them outside. Cables get dragged in the dirt during installation, a disaster for electrical connectors. I use protective caps from ABR Industries on coaxial connectors (taped on), and electrical tape on everything else.

Drawings are important for multi-conductor control cables, such as the ones for rotators, switches, and stack matches. Again, any kind of sketch is helpful, or use a drawing program. Show the color codes, pin numbers on each connector, connector type and sex, and cable type. I prefer to draw the entire end-to-end connectivity on a single page, all the way from the shack to the top of the tower. That way, I can troubleshoot anywhere along the line with just one drawing. Figure 7 shows part of a typical control cable drawing.

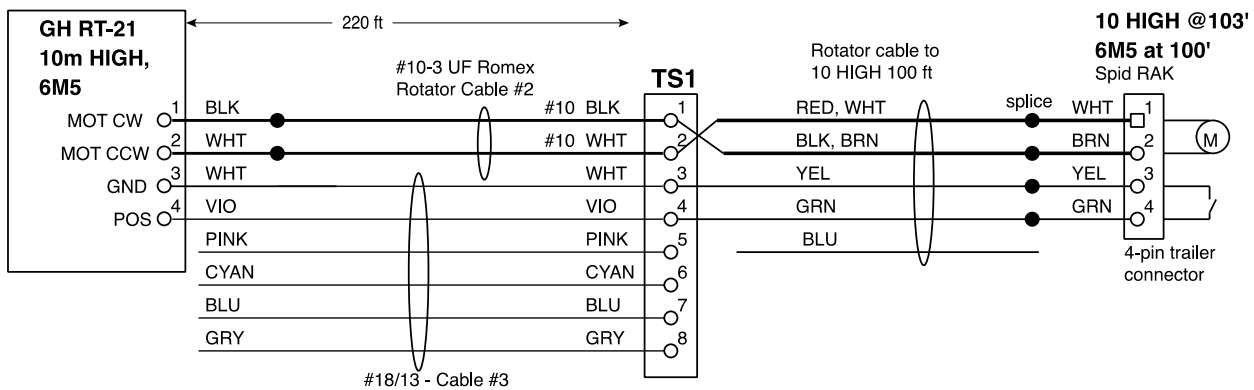


Figure 7. Typical cable diagram for a rotator. This makes construction and troubleshooting easy.

For RF coaxial cables and switches, I generally make a block diagram that shows all the interconnected elements and identifies the connector and cable types.

In order to make preassembly possible, you need a detailed **cable list**. Since you already have a scaled drawing of your tower, lengths are fairly easy to determine. Make a spreadsheet that looks something like Fig. 8. Keep this list forever. If a cable needs to be replaced or an antenna moved, you'll know exactly what's on your tower. Figure 9 shows our bin full of fabricated cables, organized and ready to go. I'm now known as *Gary the Cable Guy*.



Figure 8. Cable list. Necessary for preassembly and tracking of many cables.



Figure 9. Nearly all the cables ready to go, in one bin. Protected, labelled, and organized.

Planning for Build Day

Get your tower contractor involved very early in the process. They will have to implement all your grand ideas, and you must have their 100% buy-in well before they show up. Having drawings and a parts list will make it clear what you are planning. Hector had a lot of useful suggestions especially on guying and also provided some of the materials. Figure out how much additional help you will need. We tried to have three people as ground crew at all times through the four long, hot days of construction. That means you need to coordinate schedules with everyone. And don't forget the food and water!

Hector had a clear plan in mind for the construction sequence:

1. Remove everything from the existing tower, right down to the last scrap of old tape.
2. Refurbish and test old antennas and mounts. Assemble new ones.
3. Replace old guys, then add sections, installing new guys as it grows.
4. Install antennas etc. generally from the top down, aligning as we go.
5. Install cables and connect to shack.

Remember that the person up the tower is the boss. The ground crew needs to be in constant communication, whether it's by yelling or radio, and following directions at all times.



Figure 10. Left, hoisting a tower section. Lower guys are already tensioned. Upper right, the winch operator (KK6PXT) has a lot of responsibility. Lower right, preparing to *tram* a 10m Yagi.

The business of refurbishing and testing is really important. Antennas that have been aloft for many years can have lots of issues, such as corroded and outright failed hardware, damaged elements, and more. The ground crew was very busy on this task and there is no way to do it in advance. I fabricated new K9YC-approved feedpoint chokes for our 10m Yagis. Every antenna was checked for SWR on the ground to verify basic function. Speaking of chokes, when you are upgrading antennas and cables it's a perfect time to install modern common-mode chokes to help reduce receive noise [Ref. 4].

Heavily-used rotators should not be reinstalled without a rebuild (Fig. 11). Rusted bolts should be discarded. I suggest getting your nuts and bolts from a proper supplier, such as Fastenal or McMaster-Carr instead of the unknown junk from the Big Box store. Of course, you can't order such things on the day you are building the tower, so do try to plan ahead. Old coax can deteriorate and connectors are always suspect. I use a vector network analyzer (VNA) or two-port antenna analyzer to measure



loss and a high-voltage insulation tester to verify dielectric integrity. Your tower project is a big investment and the newer and better the hardware, the longer it will provide reliable service.



Figure 11. This Alfa-Spid RAK rotator definitely needed servicing.



What Went Wrong

Thankfully, nothing horrible... A shipment of guy grips came up one short, requiring an emergency order and overnight shipping. A connector didn't mate up properly with the switch due to the way the receptacle was mounted. A replacement jumper was located for that. We ran out of time connecting everything to the shack, so testing of the Tornado tuner on the 80m dipole could not be performed until Hector had headed home. It appeared to be stuck (disaster!) but with some advice and a nudge from a DC power supply, we got it working. Also, we later found that the antennas on the swing-arm mounts weren't at quite the right angles, limiting their motion somewhat. That's why it's a good idea to allocate time to test everything before your climber leaves, even if it means quickly hay-wiring a controller just to be sure a rotator turns properly.

Conclusion

Everyone, especially Ken, was pleased with the pace and quality of work. We had few construction difficulties and learned a lot from the process thanks to the guidance from Hector. The new 80m dipole is playing very well so far, though we're waiting for winter to really exercise it. It's a magnificent sight, and looks brand-new shining in the sun (Fig. 12). I'd say the planning paid off.



Figure 12. The completed tower shining in the California sun.



Acknowledgements

Thanks for the support of the entire N6RO team and especially the construction crew: Ken, N6RO; Hector, XE2K/AD6D; Nahum Ruiz and sons Luis & Ricardo; Greg, KK6PXT; Kevin Reasoner; Roberto, K6KM; David, W6DMW; Chris, N6WM; and John, WX6G.

References

1. *Up the Tower* by Steve Morris, K7LXC, available from Champion Radio. <https://www.championradio.com/>
2. *Antenna Towers for Radio Amateurs* by Don Daso, K4ZA, published by ARRL.
3. *Mast Load Estimator* online calculator from DX Engineering. <https://www.dxengineering.com/mastloadestimator>
4. *A Ham's Guide to RFI, Ferrites, Baluns, and Audio Interfacing*. Jim Brown, K9YC. <http://k9yc.com/RFI-Ham.pdf>

Additional photos are available at: <https://www.flickr.com/photos/wb9jps/albums/72177720299680084>

The June, 2022 NCCC monthly club meeting includes a presentation on this project. Video is available at: <https://www.youtube.com/watch?v=SUoBo88ttwE&t=3045s>



I wish to express my appreciation and thanks to our Board of Directors for their generosity in replacing NCCC Awards that were lost in the fire here two years ago. The board offered the opportunity to chose six replacement plaques. These plaques arrived in perfect condition and are presently gracing the interior of the mobile home where we sleep, awaiting the eventual rebuild of a proper radio shack.

Thank you.

Bob Wolbert, K6XX





August 2022 AE6Y VP/CC JUG Column
(Continued from Page 4)

There was a lot of Club participation at all levels of activity. Many fine scores, including our Team #1 (WD6T@W6YX, N6TV, N6ZFO, K9YC, and N3ZZ), which is only behind one team among the ones that I count as fair competitors – i.e., an FRC team of guys in one local area; I discount teams made up of ringers from around the country.

CW Ops

To all NCCC members with an interest in CW, I strongly commend the CW Ops club. Founded a little over 10 years ago by a group dedicated to preserving and expanding the art of CW, both conversational and in contesting, the Club has been a major force in the survival of CW in the face of the FT trends. It now numbers over 3200 members, each of whom proudly sends their membership number in the weekly CWTs (see below).

One of the founders, and someone who has devoted countless hours to the club, is our own Rob Brownstein, K6RB (CW Ops #3). I remember talking to Rob about it early on, and when he assured me that this new club would not have the exclusionary or elitist attitude of some existing groups, I signed up and became number 38. The only requirement is the ability to send and receive at 25 wpm and to carry on a CW conversation in English. One of the outstanding activities of the Club is its newsletter, Solid Copy, which features in each issue pictures and biographies of each new member. It is fascinating to see the variety of ages and backgrounds of the new members, and some of the write-ups are quite touching – for example, see the bio of N4JEH in the July issue. She is an exuberant teenager adopted from China, who has a variety of other hobbies and skills, and doesn't appear to let her blindness stand in her way of any of them. Our own W6DER and KF6NCX are also profiled in the same issue.

A number of the new members were aided in mastering CW through one of the Club's activities, the CW Academies, which are instructional programs designed to bring a beginner along, or to aid someone who is rusty or never was able to get over a cw speed plateau, to reach the magic 25 wpm goal.

Although the CW Ops is not primarily a contest club, they do have two offerings that are of great interest to contesters. One is the weekly CW Tests. These CWTs are one-hour contests held in three time slots each Wednesday. They are reported to 3830, but no logs are sent in or scored. The exchange is just your name and CW Ops number (or state if you aren't a member). Originally, if memory serves, these were only once a month, but they proved to be so popular that they now get hundreds of entrants each week.

It used to be that if you got 100 contacts, that was doing very well, but they've now exploded so that the top scorers push 300. Most of them are dominated by a few East Coasters, with AA3B, K3WW, N4YDU and a few others usually at the top, but some West Coasters are making inroads, notably N5ZO in SoCal and our own Prex, WD6T. The top scorers are using two radios, maybe 2BSIQ, and also CW Skimmer and packet to find stations they haven't worked already and pounce on them quickly. But, putting aside the competitive aspects, the CWTs can be very helpful in trying out different techniques, like CW Speed, running versus S&P, high versus low power, etc. Or they can be used just to stay in contest shape, even if you don't care about the score and don't report it.



The second event is the CW Open, which is occurring next month on September 3. Here's what Rob said about it in an email to the NCCC:

On September 3, starting at 0000Z, the 11th running of CW Open will take place. It is three separately-scored contests of 4 hours, each, separated by 12 hours, and then 8 hours, with the first starting at 0000Z; the second at 1200Z; and the last at 2000Z.

Each session starts from scratch with 0 points and 0 mults. You get a point for each callsign each time you work it on a new band. You get a mult for a callsign only the first time it's worked. So, there is far less incentive to move calls to multiple bands than to try and work as many different calls per band as possible. Also, because every QSO is worth a maximum of 1 point and 1 mult, regardless of QTH, someone using a modest station could run up a respectable score. As Rusty opined back in 2010 when we discussed CW Open, "someone running 100 watts with a dipole could win it on one band if there was enough participation."

When it's over, if you want to be considered for listing/award, you must submit a log for each session in which you operated. If you did all three, you will submit three logs.

You are only competing for awards with people in your IARU Region. That makes it more appealing to people, worldwide, who would have trouble competing with stations in ham-population-rich areas.

The exchange is easy - QSO number and given name - so, AE6Y would send 543 Andy, or whatever. This year we anticipate a greater number of JA participants than in previous years. The A1 Club in JA began a Wednesday morning 1 hour contest practice called "AWT" and it has become popular. It starts at 1200Z on Mondays (ouch) but everyone works everyone. As a result, there has been some significant spillover into CWT's 1300Z session that follows right after. It is hoped this will help increase JA efforts in CW Open, too.

Awards are given for each session, in each region, based on top score, top score in HP, LP and QRP categories. There is no distinction between assisted and non-assisted. And, all are single-operator efforts. N1MM plus several other logging programs support CW Open. You can participate full time or part time in one, two or all three. It's your choice.

PVRC and FRC are big players in CW Open. It would be nice to see a decent turnout from NCCC, too.

You can see from his post a number of unusual features of the CW Open. The first is the three separate sessions, each of which is scored as a separate contest. There is also a combined competition if you enter all three.

I actually did so in the inaugural running of the CW Open in 2011, in which I did as well as I have ever done in any contest from home, finishing second in the combined category, beaten narrowly by Bud, AA3B. To show you how this contest has grown, Bud's combined score was 127 kilopoints, and I was a few kilopoints behind. Since then Bud has become the acknowledged master of this event. Last year he won it again, this time with 705 kilopoints, almost a 600% increase in total score!



A second nice feature is that the multiplier isn't geographically based but is simply the number of different callsigns worked in the four-hour session, regardless of band. So there is a real premium both on running and on looking for others that you haven't yet worked on any band. And you certainly don't want to worry about moving mults!

However, apropos of moves, I was looking at my log of the first, late night session of the 2011 CW Open. Actually, it was even later then, as the first session ran from 0400Z to 0759Z, very late nighttime period which was subsequently changed to start at the more reasonable hour of 0000Z. Anyway, what I noticed is that in that contest, which was mostly a 40/80/160 affair with a bit of 20m dxing thrown in, I worked Rusty (W6OAT), Ken (N6RO), and Ed (W0YK) also on 15 and 10, in each case on moves from 80 late in the contest. Rates were low (as witnessed by the fact that with 195 QSOs in four hours, I came in second in the whole contest, just edged out for first by W0YK, BTW), so we obviously were having a bit of fun and just searching for extra Qs, the way we sometimes do when "running the band/modes" with a friend on a slow Sunday afternoon in CQP.

So I commend to your attention the CW Ops club if you are not already a member, the weekly CWTs as ideal training sessions, and the CW Open as an enjoyable contest with a unique flavor. In that regard, here's a pome:

In appreciation of K6RB

Rob Brownstein has worked night and day

To get the new club set to play.

It's now got its mojo,

So let's hit C-W-O,

And join in the contesting fray!



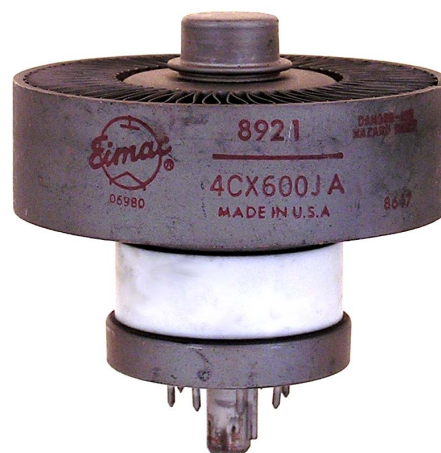
Tube of the Month

4CX600J – 4CX600JA

In 1958, EIMAC announced the [4CX250B](#) as the latest iteration of the old 4X150A which was first introduced in 1947. Many versions of this tube were made to meet a number of applications. In 1971, a more powerful tube was introduced using the basic format. The 4CX600J/8809, soon followed by the [4CX600JA/8921](#), were designed to be amplifiers with very low intermodulation distortion in AB or AB1 mode. The large anode cooler permitted a dissipation of 600 watts. With a maximum of 3000 volts and drawing 600 ma, a single tube could deliver 1000 watts output. A pair would make a very good 1500-watt amplifier. These tubes have low input capacities and were recommended for use with solid state drivers. The 4CX600J has an anode diameter of 2.08 inches and the 4CX600JA has a diameter of 2.52 inches. The added size of the JA allows it to operate at full power with reduced back pressure. The J version requires .81 inches of water while the JA gets by with only .21. The lower required cooling is especially useful in aviation and other high altitude applications. The two tubes are electrically identical. EIMAC made unique ceramic chimneys for these tubes.

The oversized cooler feature must have been a success because in a few years, EIMAC added a 2.08 diameter cooler to their ruggedized [4CX250R](#) and named it the 8930 which was rated at 350 watts of dissipation.

Visit the museum at N6JV.com





NCCC Life Members

Gary, NA6O, NCCC Membership Committee

Congratulations to the following members who have been voted in as Life Members of NCCC:

N3ZZ

K6TD

K3EST

WU6P

K6KM

W6JTI

KH7Y

AF6RT

If you're interested in becoming a Life Member, fill out the online form at this link:

https://www.memberplanet.com/s/nccckb/life_membership

The one-time fee is \$250, and you'll no longer get those annoying dues renewal notices. If you are 80 years old and have been an NCCC member for at least 20 years, you are eligible for a FREE life membership. Just check the box on the form.



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 the maximum of:

- Northern California, anything north of the Tehachapi's up to the Oregon border, and
- A part of north-western Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles North of Auburn on Highway 49).

Life Memberships. — \$250.00 Contact secretary.nccc@gmail.com. The 80/20

Rule:

Members who have reached 80 years of age and have been a NCCC Member for 20 years are eligible for Honorary life membership. Contact secretary.nccc@gmail.com

JUG Articles Wanted!

Your help allows us to produce a quality newsletter. Please consider submitting an article!

The editor welcomes any and all relevant articles for inclusion in the JUG.

The preferred format is Mac PAGES or MS Word (.doc or .docx), Arial 11 point.

Indicate the insertion point and title of diagrams and pictures in the text and attach photos separately. Pictures should be full resolution. Avoid PDF files and email text. Please contact us if that's your only format.

Send material to Saraj, KU6F, saraj@sonic.net, ph: 707-888-3906

PLEASE INDICATE "JUG SUBMISSION" IN EMAIL SUBJECT LINE.

Northern California Contest Club Reflector—Guidelines

The NCCC reflector is devoted to the discussion of contesting.

Topics include, for example, contests, station building, dx-peditions, 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"



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.

Go to <https://business.landsend.com/store/nccc/> It's easy to use.

From nccc.cc: <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.

The screenshot shows the Lands' End Business website interface. At the top left is the "LANDS' END BUSINESS" logo. To the right is a search bar with the word "Search" and a magnifying glass icon. Below the logo is the URL "https://business.landsend.com/store/nccc/". In the center, there are navigation links for "MEN", "WOMEN", and "PROMOTIONAL PRODUCTS". On the left side, there is a welcome message: "Welcome to the NCCC Land's End store. You can choose many different products and add a custom-embroidered NCCC logo." Below this, it says: "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)." At the bottom left, it provides contact information: "If you have questions, contact the NCCC secretary at: secretary.nccc@gmail.com". On the right side, there is a large orange oval containing the text "NCCC" in bold black letters. Below the oval is the text "Northern California Contest Club".



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 KPAS500 and KPA1500 amplifiers

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



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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
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