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NCCC January 2020 Meeting

TBA

When:

Where:

What:

President's Report - W6FB

The old story goes like this... You and a friend are out on a hike and encounter a bear. The bear, being a bear, starts chasing you. In order to escape, you don't have to be faster than the bear, just faster than your friend.

While this story explains to a lot of people why things need to be "good enough," it almost always ignores the most important party to the story, one who drives the action and makes things "perfect." The bear. The bear is the one in control, the one making the decisions. He chooses to make the chase, how fast to go, who to actually pursue. The bear gets to laugh at the two guys sweating things out, and can even call off the chase if he decides to do other things. In short all the big decisions are made by the bear. I am sure the bear is having the best time in this story.

So what does this story have to do with ham contesting? It actually goes a long way to describe why I chose to be NCCC president. The president, working with the board of directors, is looked on to set a direction and actions for the club. Like the bear, we are able to drive things inside and outside the club, and determine much of what happens. In short it is a lot of fun being the bear. The usual concern of potential presidential candidates is the level of complaints they have to field. In my three terms as president I have found that there are really very few complaints. Instead there are a lot of very useful suggestions. Fun? Without any doubt. But then NCCC is made up of a bunch of great folks who like to accomplish great things!

I will also say that it is a real pleasure working with the current board. We have a group of bears working together to guide the club, all of whom contribute



Northern California Contest Club

Excellence In Amateur Radio Contesting

Officers:

President	Jack Brindle	W6FB	jackbrindle@me.com
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Thursday Night Sprint:

The Northern California Contest Club sponsors Thursday evening (NA local time) contest practice sessions of 30-minute duration.

On the Thursday (and, sometimes Friday also) prior to a major contest weekend, the practice format follows the upcoming contest.

Generally, on other 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 American time. The power limit is 100 watts.

Thursday Night Contesting Director and Founder	Bill, N6ZFO
NCCC CW Sprint	Tom, N3ZZ (initially, Ken N6RO)
NCCC RTTY Sprint	Ken, K6MR
NCCC Sprint Ladder	Bill, N6ZFO
Sprint Web master www.ncccsprint.com	John, K6MM
non-NCCC:	Tim N3QE (Ladder Scores manager)
Thursday night Contesting Advisory Group:	N6ZFO, Bill (Chair)
	Mark K6UFO, (with W4NZ, N4AF, W9RE, K4BAI, N3BB and W0BH).
The Thursday night NCCC Net	Ken, N6RO

greatly. Come to think of it, I see no hikers in the club. Not that they outran the bears, but rather chose to contribute and compete!

As this term is about two-thirds complete, we continue to look to the future. One thing to start planning is the makeup of the next officers and boards. NCCC is a 501C3 educational organization, which really helps in our education goals and efforts. With this in mind, and noting that impending changes will prevent me from serving a third term, we will be looking for new bears to join in guiding and directing the club. If you are interested, please let us know. I am not exaggerating when I say that I have very much enjoyed my experience so far as president, and have had a lot of fun. With the club's 50th anniversary coming up this next year, we expect to have a great time celebrating the greatness that has built over the past 50 years. And that will definitely be a lot of fun!

New Jug Editor

A big thank-you to Bill, N6ZFO, for taking over as the Jug editor. As we have already seen with last month's edition, I am sure Bill will continue making the Jug the best contesting newsletter around!

Zero Falls Alliance

The two major things we wanted to accomplish are new member growth and education. Quite a few new members have joined over the past few years, and we continue to work on the education aspects. At the December NCCC webinar meeting K1IR gave an outstanding presentation on the Tower Safety Initiative. Jim emphasized the dangers of tower work and the right ways to avoid becoming an SK while working on your antennas. This Zero Falls Alliance is a very serious effort to aggregate the talents of many organizations to publicize tower safety. The NCCC board voted at the December meeting to join the Zero Falls Alliance as an active member. Noting the great talents of our members, and especially the talents we have concerning tower safety, we believe we have much to offer in this effort, and call on our members to help out. And please, whatever you do, practice safe climbing. We love our members, and do not want to see any one of you suffer from even the slightest misstep. We'd like to have you around for a long time to come!

73 and Happy New Year!
Jack, W6FB

Vice-President / Contest Chairman Report - W6SX

RTTY Roundup

Last year we won The Gavel. Let's do it again.

My original thought was that this was going to be a pep-talk column. But you don't need more drum beating. We all want to win The Gavel and we all know what it takes.

Every Point! Every Log!

Every Log is very important because we need at least fifty NCCC logs to be in the Unlimited Club competition. Less than fifty logs and we're in the Medium category which means no gavel.

End of drum beating. Now random thoughts to help us all have RTTY Roundup fun. It is always good to read the rules. <http://www.arrl.org/rtty-roundup> In particular watch your off times. RU off times rules are different from most contests. Scroll down in the link to Off-time Requirement.

2019 RTTY Roundup was first year for FT8 and it played a big role. Logs submitted were up from 1,620 in 2018 to 2,642 in 2019. There were 582,000 contacts in 2019--130,000 were FT8.

It remains to be seen how big a role the FT modes will play in 2020. I checked my 2019 log and my worst hour was 31 (2000z Sunday). With FT4 in the mix this year, if things slow down to 30 per hour or so, I might switch over. Using FT modes will have to be an individual real-time decision

Then there are multipliers. States and provinces will come to you. The big payoff will be European countries. Be on twenty at the right time with beam heading right direction to get new mults. FT8/4 might be helpful here. Again, an individual real-time decision.

If you don't do RTTY but do the FT modes, please get on and submit your log for NCCC.

Note, when working FT modes, be sure you have RTTY Roundup contest mode selected.

Consider running Assisted aka Unlimited. Really helps find mults and really helps power S&P'ing.

Don't neglect 14101 and above. There will be lots of stations up there. Same for 40m and 15m.

For FT8 and FT4, delete or rename both ALL.TXT and wsjtx_log.adi. Also reset contest log.

RTTY RU Practice sessions announced by WK6I

2200-2230 UTC, 3 January (Friday afternoon NA time) - RTTY focus

2230-2300 UTC, 3 January (Friday afternoon NA time) - FT4/8 focus

0200-0230 UTC, 4 January (Friday evening NA time) - RTTY focus

0230-0300 UTC, 4 January (Friday evening NA time) - FT4/8 focus

"Focus" just means: let's focus on RTTY or FT for the 30 minutes - but if you want to practice switching back and forth between RTTY and FT by all means do so. I expect you'll find others of a like mind and it sounds like a good exercise.

Operate just like it's the real thing that starts on Saturday the 4th. Use whatever bands are open and active for you at each time slot. For FT8, let's avoid the default "watering holes" - the following dial frequencies as recommended by Joe K1JT in the January 2019 QST** would be a good starting place: 3590, 7080, 14130, 21130, 28160.

For FT4 - since FT4 is a designated contest mode anyway - start with the default dial frequencies currently baked into WSJT-x 2.1: 3575, 7047.5, 14080, 21140, 28180."

If anyone needs help getting setup for either RTTY or the FT modes, the NCCC Brain Trust is here to help. Post your questions to the NCCC reflector or email me directly. w6sx@arrl.net

Let's win another Gavel! Every Point! Every Log!

KB,

Hank, W6SX

Editor's Comments – Bill, N6ZFO

A reminder. . . We are now publishing the JUG for a given month at the *beginning* of that month. Material for the February JUG, for example, will be due in by the last week of January. As editor, I'll make every effort to include late submissions . . . So the last week deadline is a soft one. (n6zfo@arrl.net 415 209-3084)

Echoing Hank, Vp/Cc . . Please participate in the RTTY Roundup! And be sure to read the rules. NCCC urgently needs fifty or more logs to compete for the gavel. FT8/4 yes or no? You will have to make that decision. . As Hank notes, multipliers, especially European, may be more easily worked with JT modes. I'm reminded of an astronomy analogy. Last year, we were anticipating delivery of an 18" f3.7 telescope (custom made for us by Teeter telescopes). The low f value meant



higher light transmission and more stars visible, just as FT8/4 means more signals workable. To illustrate this increased capability, I took a picture at f11, the aperture of our existing 16" telescope, and at f4.0, approximately that of the new one:

The choice is yours. . But either way, please get on the

air!!! Yes, these are actual cats.

Predicted telescope seeing for an f10.8 vs an f3.7 telescope.

Comparable advantage for FT8/4 vs RTTY in RTTY Roundup?

Shocking news reached the Editors desk today . . The venerable Tied House Brewery in Mountain View, the venue for too numerous to count NCCC celebratory meetings has closed – permanently. Can one of you prepare an article for the Feb. JUG remembering this great venue and, most importantly, thanking Ron for his years of dedication to NCCC? An interview with Ron would be welcome.

See: <https://www.mv-voice.com/blogs/p/2019/12/23/facing-months-long-closure-due-to-chemical-contamination-mountain-view-brewery-tied-house-calls-it-quits>



The NCCC 50th ANNIVERSARY

As of January 1st 2020 we enter NCCC's 50th Anniversary Year. As the year proceeds, this column will include items relevant to our 50th year, including memories of past events, accomplishments, writings and so on. Humor will be encouraged.

Rick, N6XI joined NCCC in 1977. Here are Rick's comments about that momentous event:

"When I first moved to the Bay Area around 1977, before I had established any ham radio connections, Maryland and MIT friend K3KU (then probably still K3OAE) mentioned an upcoming trip and asked if any local radio clubs might be meeting during his visit. I found a note on the bulletin board at HRO announcing a NCDXC meeting during Art's time in town and we went together. The first person we encountered was old friend Rusty W6OAT (fka K4BVD), another MIT alum, who greeted us warmly and asked "What are you doing here? You belong at NCCC!" I explained that this was the only club opportunity for Art during his visit and promised to catch the next NCCC meeting. I did and have been a member ever since. I still have an orange !"KB SS T-shirt proclaiming "4 Straight in '78!" But it's pretty worn out now."

73, Rick N6XI

Hybrid Contesting

Tom Taormina, K5RC

We've spent nearly 22 years building the W7RN Contest Station. In 2007, we got serious about multi-op again and now have 8 towers and 35 antennas at the Comstock Memorial Station.

There are physically two operating positions, one SO3R and the other SO1R. You can see the full breakdown of the station and antennas on the W7RN QRZ.com page.

The logistics of getting enough operators to do a multi-single or a multi-two has become problematic. Very few serious contesters want to make the commute from anywhere in NCCC territory. Now, due to changing family issues, it is no longer possible for us to provide sleeping quarters for operators.

Over the last four years, we have added two remote hosts. They are both K3's and KPA-1500 as shown below in the photo. The remote operators have access to all the HF antennas and rotators.

The users are mostly those who live in restricted communities or in condos. They are mostly DXers and ragchewers. None are serious contesters.

As an experiment, we made our first foray into hybrid contesting in this year's 7QP. There was a master schedule of which station (Main, Remote 1, Remote 2) would be active on what band. We had two-hour operating blocks set up.

Unfortunately, this test was less than optimal. Each operator used their favorite logging program. Since it was a "run only" operation, we did not think separate logs were an issue. Unfortunately, this turned into a nightmare for WX5S who took on the job of attempting to merge the various logs files. The operators were not skilled in handling big pileups. Several operating time slots went unmanned. For W1AW/7 in the IARU Radiosport this summer, we again had not installed networked logging. Rather we had operators that were assigned one band. That also was sub-optimal and WX5S again had to get the logs merged to send to ARRL HQ. One operator even gave out the wrong exchange. Matt is now undertaking the task of getting N1MM remote logging working. The W7RN logging computer will be the host and operators will connect via VPN. We hope to have that running in January and put together a user's guide.

We would like to operate Multi-Two in ARRL DX CW. This is an invitation for serious contesters from NCCC to join our group remotely in a robust hybrid operation.

We would likely have two operators at W7RN at any given time and would like to keep both remotes on the air as much as band conditions will permit. We would consider the remotes having priority in band assignments and operating times.

If you are interested, you will need access to an Electraft/RemoteRig setup. You will also likely need two computers. The antenna computer screen is heavily populated with antenna switches, rotators, antenna status and amplifier controls. A large monitor is recommended. This is accessed through TeamViewer.

Given our hectic lives, we believe that hybrid contesting will become *the* preferred platform for multi-op. Since we have two remotes, it might be an opportunity for a serious single op SO2R remote.

We will provide the equipment and antennas, but we need serious operators to join and help synthesize a winning strategy for hybrid contesting. I would be very proud to help NCCC become the pioneer of hybrid contesting.

A second computer would be needed for N1MM Remote Logging. Of course, both would need reliable internet connectivity. As N1MM users mostly agree, there is a learning curve that can be formidable. Operators would need to become comfortable with N1MM Logger.



Control Screen at W7RN supporting remote Hybrid Contesting



Two Elecraft KP3's and matching Elecraft KPA-1500 1.5 KW amps support remote Hybrid Contesting operations at the Comstock Memorial Station, W7RN

P40L/P49Y Tower/Antenna Work Party Oct.-Nov. 2019 Notes

Andy Faber, AE6Y

With **John Fore, W6LD**, and **Ed Muns, W0YK**. The full version will be on our website at www.arubaqth.com. This is a cautionary tale: It is neither easy or cheap to establish and maintain a contest station on a remote Caribbean island.

Background. This is the story of our tower/antenna rebuild at the P40L/P49Y station on Aruba.



The old towers and antennas at P40L/P40Y

The station consists of a small house on a lot that is about 100 feet square. As originally established by Carl Cook, AI6V/P40V, there were three towers on the lot. John, W6LD, and I bought the station from Carl in 2003. We raised two of the towers during our last rebuild project in 2008, but kept the same locations: a Rohn 45 at the back fence, and two Rohn 25 towers on either side of the house, the "north 25" and the "south 25." As rebuilt in 2008, the Rohn 45 was 65 feet high. On top were a force 12 4 el 20m yagi on a 30 foot boom, and, ten feet higher, a 2 element Force 12 shorty-forty. At the top of the tower, was fixed a one element Force 12 80m dipole, and the 160m vertical dipole was attached to the side of the tower. The south 25 was 43 feet high, with a F12 C31 on top, and the north 25 was 55 feet high with a custom, no kidding, F12 5 el 15/2 el. 10 on top.

Our F12 antennas had worked well, but the towers were showing signs of serious deterioration after 11 years in the Aruba air. Meanwhile, F12 designs had been acquired by Ken Garg, W3JK, who was producing a line of JK Antennas that we decided after much discussion to use. Unlike the relatively light, riveted construction used by Force 12, these were heavier and had elements assembled with various sizes of screws and nuts. We are worried about the use of the stainless steel hardware on the aluminum elements, but will see how they work out. Here was our plan:

We were planning to install new antennas as follows:

- 1) Replacing the C31 on a new south 25 with JK Mid-Tri, three elements on 20m, four on 15m, and five on 10m on a 24-foot boom.
- 2) Replacing our two element 10/five element 15 on a new north 25 with a JK dual feed 1015: five elements on 15m and six on 10m on a 36-foot boom.
- 3) Replacing our separate four element 20 and two element 40 with a JK 2040 Falcon on a new Rohn 45: same number of elements on one 30-foot boom.
- 4) Mount the two-element SteppIR fixed N-S at about 35-40 feet on the Rohn 45.
- 5) Remove the 80m one element and hooking back up our 80m inverted vee. The 160 vertical dipole will be as before.
- 6) In the Rohn 45, install a new Yaesu rotor. That and the two Tailtwisters will have new Green Heron controllers (in part to allow future remoting).

We thought we had allotted plenty of time for these tasks, but everything was harder and more time-consuming than even our conservative projections had anticipated. We got most of it done in 10 days of hard work, but will return in Feb. 2020 to finish the job.

Sunday, Oct. 20, 2019. There was a huge amount of effort in planning logistics, including ordering, shipping, coordinating with Jean-Pierre, P43A, and others on the island etc. Almost all of this was done by John Fore, W6LD, with a bit of help from Ed Muns, W0YK, and me.

On this Sunday before leaving, we had decided that we would make up some jumpers for the antennas, using the K3LR method of preparing the PL-259s. I ended up making five of them: three for the 1015, one for the Mid-Tri and a 47-footer with leftover Bury Flex. Here's my method: [11-step method deleted]. John made another five jumpers. Having all these jumpers completed in advance the trip turned out to be very valuable, as we had more than enough other tasks to fill the 10-day work party while in Aruba.

Thursday, October 24, 2019. A very early start; waking up at 3:35 a.m. to drive to John's house in Atherton. Ed also arrived, and John summoned a plus size Uber Toyota Highlander that managed to accommodate our two 50-lb suitcases apiece (barely possible only because all three of us squeezed into the back seat). We had rigorously tried to keep each suitcase below 50 lbs., which necessitated leaving some tools and supplies behind – probably won't be a problem since we tend to bring multiple sets of tools, and have a huge amount of stuff on site. In addition to clothes and tools and the coax jumpers, I was bringing down a rebuilt Tailtwister courtesy of the C.A.T.S. (formerly known as as Rotor Doctor) and about a dozen of the Sterilite plastic boxes for organizing and storing parts.

The flights to MIA and AUA were both uneventful and on time, arriving in Aruba at about 9:30 p.m. We spent some time in SFO and MIA in the Admiral's Clubs indulging in their free food, clean restrooms, and even some purchased food in Miami. We all got caught up a bit on sleep on the first flight, and I spent much of the rest of the flight again reading the four antenna construction manuals, John's exhaustive 24-page day-by-day work plan, and my trip notes from our 2008 refit.

We are planning a comprehensive rebuild, including replacing all three towers and new antennas. In preparation, Jean-Pierre Lauwerys, P43A, and wife Cris, P43C, had undertaken a number of projects at our request, including:



1) Not radio related, but replacing the kitchen tile with Corian counters, a huge improvement.

2) Regarding the towers, JP had added concrete about 15 inches high to the Rohn 45 base, rather than replacing the base, just to give some reinforcement. In addition, he had jackhammered out the base of the old north Rohn 25 tower (the 10/15 tower) after he and John had determined that the corrosion of the tower base where the legs enter the concrete was too advanced to permit continued use, even with additional concrete (the leg closest to the house had separated).

The North Rohn 25 with new base section and concrete installed by JP

3) He had installed a new guy point in the NE section of the yard, about 10 feet south of the old one that had been in the corner of the lot. He had also drilled a one-inch hole in the garage vertical beam for installation of a huge eyebolt for a guy point for the north tower. It looked precarious, but JP assured us that the garage walls were reinforced in that area for strength and that it would work.

In addition, under the long-distance guidance of John Crovelli, W2GD, his landlord Humphrey and a helper had prepped and painted with some kind of acrylic paint all the new tower sections. This hopefully will extend their lifetime, and having it done for us is a huge savings of time and money.



Left: New, painted tower sections Right: Tower top plates and guy brackets

John had done a great and complex job of ordering supplies from a number of suppliers, including DXE (towers, misc. hardware), JK Antennas, Green Heron (controllers and new rotator), SteppIR, and others. This had all been shipped to the island, cleared customs at rates ranging from 6% (on towers and hardware) to 22% (on antennas and antenna controllers), and been delivered by Cris and JP.

At the cottage the new Corian countertops look great. There are boxes everywhere. Ed and I went to bed circa 11:30; John stayed up a bit later inventorying and organizing materials, in large part, to clear off table surfaces for us to start the next day. I'm in the small bedroom, Ed in the big one and John on an air mattress in the radio room.



Boxes . . .
Boxes . . .
Everywhere !

Friday, Oct 25, 2019. A hot humid day with relatively light winds [just like all the rest of the days on this trip, as it turned out]. I was outside most of the day inventorying all three antennas. I was up first, and off to Ling's to buy groceries. I realized when I got there that I had foolishly left my wallet at the cottage, but fortunately had my green purse with \$500 in cash emergency money, so could just pay cash.

Back at the house, John and Ed went over to the man lift place (JARA Equipment Rental). Before that Lisandro, P43L, had stopped over to say hello. John and he had an agreement where he would buy half (11 feet) of one of our two chrome-moly 22-foot masts. As usual he was a font of information. John Crovelli also came by to return some borrowed goods (e.g., our battery operated drill) before he goes to P49V to fix a dead Skyhawk antenna and then back to his shack for the CQWW SSB contest that starts today.

In the mid-afternoon, John and Ed made another trip to JARA to look at the Snorkel 126 (a 126-foot boom lift) they were offering as a substitute for the same price for the 80-foot boom lift that had been reserved by John. They had determined the lift would not fit through our gate, because the retractable axle on their unit was broken and could not be retracted. The Snorkel 126 is indeed an impressively large piece of equipment and would create additional maneuvering challenges.

The remainder of the day was spent inventorying and organizing materials, with me focusing on the antennas as I had agreed to take the lead on antenna assembly, and John focusing on the other tower, guying and other materials. Inventory of the JK Antenna parts was a lot of work when doing it solo; at the end Ed helped out, which made it much quicker. In all the JK antennas, the only missing part was one piece of 18-inch aluminum tubing with one-inch outside diameter for an element of the 1015. There's a lot of variously sized hardware with these antennas; in place of the ubiquitous Force 12 rivets, there are screws and nuts of many sizes to keep track of.



Ed had called and made a reservation at Marina Pirata for a birthday dinner for me. It was very pleasant sitting out on the water, and we were joined by Lissette and Lisandro, who, as always, were delightful company.

Saturday, October 26, 2019. A very busy day, finally finishing working by the porch light outside at 7 p.m. We then went out for dinner at the Santa Cruz Bar, a Chinese restaurant/bar in Santa Cruz, about two miles away. I was very happy to take a shower. I came here with my Aruba shirt still anointed with one Noalox patch from 2008. By the end of today, it had many more, as did my

JK antenna parts for the 1015

shorts, and my exposed thighs looked blue from bruises, but it was just the remnants of Noalox that hadn't yet been washed away.

Today was a day for antenna building. Ed and I started on the 1015, by assembling the 36-foot boom and attaching it to a metal mast that holds up one end of the clothes line and is perfectly located off the back porch for this use. We then assembled the center sections of all 11 elements

(five for 15m and six for 10m), which involved a lot of measuring, fiddly parts connections etc. That took until 12:30 or so, when we all took a break for sandwiches.

After lunch, John and Ed finished the boom and center section alignment and installed a Phillystran truss to replace the nice stainless one that come with the antenna, but that we worry will fall apart in Aruba. Although the steel truss cables furnished by JK look beautiful and shiny, Lisandro says that the problem tends to be not the cable, but the cable crimp (and, we ended up needing trusses of a different lengths than the standard trusses anyway). Ed also spent quite a bit of time figuring out how to reverse the brackets for the baluns to put the body of the baluns (which are boxes about 4 inches square by 2 inches deep with two output terminals and one coax input at either end) closer to the boom so that they can be secured to the boom and not be at risk of vibrating in the wind.

Meanwhile, I assembled all 11 elements – more accurately, 22 element halves. This involved coating ends of telescoping tubing with Penetrox, then putting in one screw per joint of various 8-32 or 6-32 sizes, and measuring and mounting the tips with hose clamps. Normally the tips are also predrilled, as they are in the Mid-Tri, but because our dual feed design is not standard, Ken felt that all the element tips should be adjustable. He has been very helpful when we have called him a few times, and Ed even sent him a picture of the revised balun placement today and got an immediate OK from the designer.



Andy making 1015 elements



Ed and JP installing 1015 center sections

At about 4:30 we started on the Mid-Tri. We assembled the three-piece boom (the 1015 had five pieces), after Ed and John applied some muscle to straighten out one end of one of the sections that had gotten bent inward slightly in shipping. We mounted it, then John and Ed spent time working on the three 20m element center sections, while I made all ten 10m element halves and all eight 15m ones. The boom is only 24 feet, so it seems quite manageable compared to the 1015, though it has a more complicated feed system with three drivers in proximity. The coax and balun go to the 20m driver which is connected by two angle strips to the other two driven elements. I finished about 15 minutes after they did, by the porch light which did not provide ideal seeing conditions. I was glad that I had brought the right Allen wrenches, nut drivers, and various socket and open end wrenches. Also a supply of plastic nitrile gloves and a big package of cheap little utility brushes (the kind with five-inch aluminum handles) for dipping in the Penetrox bottle to coat the outside of all telescoping tubing as well as the threads used to hold everything together. The element hardware is stainless, with Nylock nuts, and there is said to be serious risk of galling on those as well as

the threads used to hold everything together. The element hardware is stainless, with Nylock nuts, and there is said to be serious risk of galling on those as well as the larger bolts used for everything else without such anti-seize paste.



I mentioned that we were missing one piece of tubing. After calling some tubing suppliers on the island, John and Ed decided to cannibalize some old elements that had been removed from our old 20 in 2008. After 30 minutes or so of cutting, drilling, and cleaning, we had a perfect replacement..

Sunday, Oct. 27, 2019. Another very full day. It's now 7:45 and I just took a shower and feel human again, albeit tired and sore. We are about to go to the Urataka Center Pizza restaurant to have dinner with John Crovelli, who operated the contest low power this weekend.

John and Ed with the repurposed F12 tubing

I woke up after a better sleep a little before 7, so couldn't resist going running from our circle north to the next one, in the very pleasant Linear Park that they have built after widening the road to our circle. There were probably about a dozen other walkers and runners and about the same number of fairly serious looking bicyclists. Everyone smiles and says "bon dia" to you.

The first order of business for me was to finish the 20m elements for the Mid-Tri, then I moved on to building all the elements for the 2040. There are only six of them but they are more complicated, particularly the 40m elements which have large solid metal loading coils in each element which have to be fastened onto the element with complicated hardware in a very specific way. JP came over and worked with us all day.



JP Holding a 40m Element

Late in the afternoon, we mounted the Mid-Tri on the Rohn 45 and checked with the RigExpert antenna analyzer. Its resonance points were all a little low as expected. We checked all the dimensions carefully with a tape measure, and they were all spot on.

John, Ed, and JP spent a lot of time finishing the element alignment on the Mid-Tri boom, then started assembling and checking out the 2040 boom. Ed and I put together the center sections. For 40m they are much heavier than on the other antennas, with a U-shaped "channel" about 18 inches long substituting for the normal boom to element plates. We did a bunch of yard cleaning up and moving tower sections around in anticipation of the man lift coming tomorrow morning. There is a huge amount of work involved in building these three JK antennas, including lots of time aligning, straightening, final tightening, dealing with truss cables, etc. We all worked very well together but I'm tired and sore.

Dinner was good, sitting outside at the Urataka Center Pizza Place. The World Series was being shown on a very nice large screen TV. We had a Meat Lover's pizza, in John C's honor, and two Balashis each. John had done very well in the CQ WW SSB contest, racking up 5M points low power assisted. Back home at 10:25 for an early bedtime.

Monday, October 28, 2019. We all were up by 7, checking news of CA wildfires, etc., in anticipation of the arrival of the truck. It finally came at about 8:30, as did JP, and a little later John Crovelli as well. It arrived just about the time I returned with shopping from the Calidad Supermarket. This is yet another small Chinese supermarket, but is practically within walking distance. Only one guy there spoke English, but when I said a few words in Chinese, they all smiled. I never knew this store existed, but John and Ed were aware of it and have frequented it on past visits.

The man lift is huge, a Snorkel 126-foot lift. It has one large telescoping boom with a bucket at the end. We had a lot of problems all day long, and had to have multiple visits from an operator (who only spoke Spanish) and a mechanic, particularly since in the morning and also in the afternoon after the operator had laboriously driven it into the backyard, the axle would not expand. What is supposed to happen is that a little jack projects downwards from the front and raises the wheels off the ground so they can be hydraulically extended or retracted, but for some reason the jack was a problem item, causing several hours of delay. Eventually by late morning the lift was in place and ready for use.

Anyway, it was first positioned outside near the south tower, as the first order of business was to take down the 43-foot Rohn 25 tower with the C31 on it. Using the lift, John and Ed took the antenna apart element by element. They reported that the U-bolts came open easily (usually by breaking a rusted bolt/nut) and the elements could just be slid out and lowered on a rope to the ground. After all the elements were removed, John and Ed removed the boom from the mast, lashed it to the lift basket, and were able to bring it down to ground level without getting too close to the power lines along the front of the house.

While all this was going on, we had put the 1015 up on the Rohn 45 at five feet or so off the ground and checked that it seemed to have resonance dips mostly as expected. I had noticed that some of the elements that I had made had loosened slightly, so, with John Crovelli's help I rechecked the tightness of all of the elements for all three JK antennas. Either as an effect of tightening with Noalox, or maybe just heat cycling – something had definitely loosened some of the joints.



After a lunch break, we quickly took down the old C31 tower in two sections of about 20 feet each, using the lift as the "gin pole", and with John Crovelli's assistance on the tower. Although the sections came down very quickly, later in the week JP would end up needing to spend a lot of time and effort dismantling the upper sections and removing the mast due to the extensive rust.

The Snorkel 126 arrives

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John and Ed removing the C31

ranged with JARA for the lift op-
after we were done with the C31
tower, which turned out to be
were anxious about moving the
backyard given its massive size.
had difficulties retracting the ax-
quite a bit of wasted time on the
“coached.”. After about an hour
le retracted and then he labori-
tioned the machine into the
put it in position to take on the
tower. It must have taken him
hour, but he did it perfectly
five inches of clearance on
of the gate opening.



Driving carefully through the gate

At the end of the afternoon, John C climbed up
the 45 and disconnected all of the coax cables,
tossing them down for JP and me to coil up and
label. John Fore took me up for a ride after the
three JARA employees had left. It was fun to
ride up and see the great views from 65 feet up.
(Pictures—next page)



View to the East from 65 feet



View to the west. The cunucu (public land) is where we have our beverages. The water is about 3/4 mile away.

However, we could also see very bad rust on some sections of the tower legs, getting worse as you get near the top even scarily including holes an inch or two long entirely through the tower legs.



The Rohn 45 after 11 years!



The machine itself is hard to control. Although John got better at the operation as the week went on, repositioning the bucket could be time-consuming, and we estimate that we may have lost nearly two full days due to its recalcitrance. Sometimes the controls operated smoothly, other times there would be no movement then a sudden jerk of the bucket, and sometimes when seemingly well within its design parameters it would suddenly get upset, start beeping and lock up

John in his element

We drove up for dinner at 7:30 to Barefoot, the very nice restaurant

just north of the airport, where we met John C.

I should relate an unusual occurrence. At one point in the day, I lifted the lid on the toilet to use it, and was confronted by the green head and upper body of a lizard staring at me. Since we keep the lid down normally, it's hard to envision exactly how he got there. He seemed as surprised as I was, and turned around with his head in the (clean) water, at which point I grabbed his tail and released him in the front yard. I would guess his total length was about 18 inches. There's an obvious moral for toilet users here.

Tuesday, October 29, 2019. Ed and John spent most of the day in the man lift bucket wrestling with the Rohn 45. JP and I were ground crew. They first took down the 20, which now has only three of its original four elements. They took it apart element by element, and we lowered each to the ground, using the same pull-rope pulley hoisting system we used on the south 25. Before that, JP and I spent some time sealing the coax ends and labeling all the feedlines that had come down yesterday afternoon.

The 40 was next, only two elements but about 10 feet above the top of the tower. The 40 mast clamp was loosened to allow the antenna to be lowered down to the tower top and the antenna inadvertently dropped a few feet, hitting the top of the thrust bearing. Surprisingly the shock actually bent the tips of all four half elements downward. None of us thought there was nearly enough force to cause that.

Even the Force 12 Sigma 80, which is a big, heavy brute, came down smoothly. But they had to do a lot of cutting using the battery powered grinder. In fact, the biggest time sink was deciding exactly how to deal with the top section, which has a heavy top plate, a rotor, and the 140-pound/22-foot chrome-moly mast. They eventually cut the mast in half (just above the thrust bearing) and cut the tower about three feet below the top, and we managed to lower the pieces successfully to the ground. We ran our old heavy pulling rope down to a pulley at the base of the tower, then through another one that JP had brought over attached to the tree near the garage, then to JP's Rav4, used as a tow mule. They'd yell instructions to me, I'd relay to JP with hand signals, and all in all, it worked smoothly and safely.

They cut out the two sets of guys after we had loosened them (top set) or disconnected them (bottom set), and merrily kept cutting their way down the tower section by section (the rust was so advanced on the upper 30 feet of the tower that cutting the tower legs with the grinder literally only took seconds). At about 6 p.m. there were three sections left. Stymied by the grinder's two batteries having been used up by that time and with only 15-30 minutes of remaining daylight, we called it a day.



Left: Ed and John getting ready to start cutting the Rohn 45

Right: JP as ground crew in the cunucu

It was interesting to look at the material coming

down off the 45 tower. As mentioned above, the top 20 feet or so of the tower were pretty bad, especially the holes near the top- some of which were larger than an inch in extent. The chrome-moly mast was highly corroded also, though seemingly still structurally sound. The Force 12 antennas were a mixed bag: generally the aluminum tubing and the connecting rivets were all in good condition, but the areas where there was steel in contact with aluminum were heavily corroded. This latter included the boom-to-element plates and the U-bolts holding them on. Some of the U-bolts had failed about two years ago, causing the 20m reflector to drop, and a similar failure had caused one of the 80m T-bars to fall off.



A piece of Rohn 45 ~ and we used to climb that??



In the interstices of these aerial operations, JP and I tested the seven newly-shipped and painted Rohn 45 sections that we now have on hand. All sections fit together OK, but we had to enlarge or massage slightly over 50% of the holes (misusing a portable drill with a slightly smaller bit for that purpose), which are of two different sizes at each joint. We also did a little filing on the inside section ends to remove protrusions or burrs that might impact their fit.

Ed and JP at the Rohn 45 test stand

After a beer, we went off for another meal at the Santa Cruz Bar, but it was closed, so our general debilitation led us to the McDonald's nearby. Not a particularly good meal, but cheap and quick.

Wednesday, October 30, 2019. It's 10:33 p.m. I'm about to go to bed. After work I went grocery shopping at the Calidad Supermarket, then stayed home to continue building the SteppIR, while John and Ed went back for Chinese food, thoughtfully bringing some back for me. JP and I had started to work on the SteppIR in the morning, with simple stuff like building the boom, but got diverted for the rest of the day with support activities. I set up a soldering station at the kitchen table, using the old Black and Decker workmate as a holder.

A lot got accomplished today, starting with removing the last three sections of the Rohn 45. JP and I continued our "gin pole duty," pulling and letting out the gin pole cable (fortunately using his RAV4, not our arms) while John and Ed lowered sections down. Generally, I would make sure the tower section was positioned, then give JP hand signals, since he couldn't see the lift bucket from his car, nor hear them. When that was done, they immediately started adding sections.

When they got three new ones back up, they stopped while we figured out how to do the guying. We arrived at a rather complicated scheme, rather than calculating lengths with geometry. Each guy point first of all has an equalizer plate, then a "pigtail" of ¼-inch EHS, then Phillystran to the attachment point. Here's a summary of the process:

- (1) Making the EHS pigtails takes a lot of effort, as we are using big grips, not cable clamps. They are very ornery to work with. Fortunately JP enjoyed that sort of struggle and has strong hands, while I assisted him by holding parts in the right direction, having my tool belt with a vise grips, channel-lock pliers and large screwdriver, along with a supply of Phillystran end caps and black tape for them. But it was hot, sweaty work.
- (2) The tower attach points are to guy brackets using ½-inch oval iron loops about three inches long. However, the thimbles had too narrow a spread between their two jaws, so JP pounded on the ring with a hammer while I held the ring with vise grips to force it through, then we had to straighten out the thimble jaws with the vise grips and a 12-inch wrench.
- (3) We would attach one end of the Phillystran to a big grip attached to the EHS runner to the guy point, then have them hoist up the Phillystran, still connected to the huge roll it came on, then cut it to length, toss it back down for us to put on the big grip and the hardware mentioned above, then we'd hoist it back up to them to attach. In this manner we got all three lower guys attached and one of the top guys also.



The cottage with NO towers and the man lift in the backyard

At the end of the day, there was some discussion about whether to use all seven sections or stop at six. The main attraction of the extra section would be better results on 80 and 160, not 20 and 40. I said I wasn't going to vote, since Ed and John were the ones in the lift, but JP was strongly against the added height, as it would just be harder to service, and seeing all the damage in the last few days made us worry about the longevity of the new kind of antennas. In the end, John and Ed maneuvered the lift up to 75 feet or so to see how it felt, and announced that discretion was the better part of valor in this instance. We finally quit after 6:30 when it was getting too dark to operate the lift safely.

Thursday, Oct. 31, 2019. Got up at 6:45 to work on the SteppIR. A lot of fiddly electrical connections took an hour or more, but when finally set up activating the “Test Motor” sequence from the controller showed everything working, even through 150 feet or so of control cable. The beryllium tapes go in and out an inch or two just to verify the basic functioning, with a whirring of the stepper motors. Ed took over my soldering station to rewire a control cable pigtail to our new Yaesu 2800 rotor.

Lots of activities were accomplished today, though we are still seriously behind schedule, and discussed at dinner what our plans should be for our last three days, on the assumption that we have to do some triage and cannot accomplish everything we want to do.

John and Ed again spent a lot of lift time, finishing the Rohn 45 tower, including setting in the 11-foot chrome-moly mast (from the very heavy 22-footer we had shipped here, after cutting it in half with the grinder), installing the upper guy points and doing their part to measure and install the upper guys, and setting in the Yaesu rotor on its rotor plate.

Meanwhile JP and I accomplished a variety of tasks. These included going over all junctions for the elements for the 20/40 where there are stainless fasteners near aluminum parts of the elements and first spraying the areas with clear Krylon spray, then coating them with silicone caulking material. These are good two-person tasks, for example with one of us pushing out some caulk and the other spreading it around with his fingers, cooperating in manipulating the elements. My



The 2040 being installed on the Rohn 45



The 2040 boom installed with the centers of the elements

kneepads were lifesavers. The nitrile gloves were very helpful for the goop-spreading task.

We also extended the fiberglass poles for the SteppIR and applied heat shrink tubing to the joints, per the manufacturer's new recommendation (my 10-year old version just had used silicone tape). In another new innovation, they also now come with end caps designed to allow air circulation but keep insects out. We painted the SteppIR element halves, but our two cans of white Krylon spray paint only got the job three-quarters done. Gotta buy some more tomorrow.

We also made up some more EHS pigtails. Finally, we checked the four 10-foot sections plus the seven-footer for the north 25 tower for the JK 1015. This actually was harder work than with the Rohn 45 sections; although they are lighter and thus easier to handle, in general they didn't seem to fit as well and also needed more work on the holes. JP struggled for quite a while trying to force the top plate section (with legs about 18 inches long) onto the shortened section. He kept coming up with one creative idea after another and finally got the job done. He's a mechanical genius.

In the late afternoon, John and Ed took up the boom for the 20/40 on the lift, and managed to attach it to the tower, install the replacement Phillystran truss cables, and connect and dress the co-ax jumpers. We were prepared to send up a 40m element half to them, but they came down at about 6, and we all relaxed and enjoyed two Balashis apiece (in small bottles though) instead. JP and I sent the control cable up to Ed and John so they could temporarily connect the rotator and test its operation, so we would be in a position to rotate it as they installed the element halves the next day.



The 2040 being installed on the Rohn 45



The 2040 boom installed with the centers of the elements

The other big event was that Cris managed to line up tree trimmers, a guy and a younger helper. They did a great job with a pole-mounted trimming saw and a chainsaw of trimming five of the trees in the backyard that were interfering with guy wires; with the Phillystran, we were especially worried about abrasion.

Dinner was at the Sensei Sushi restaurant in Santa Cruz, right opposite the WEMA hardware store. It was excellent. Definitely the best meal for me ever in Santa Cruz. We are all so tired at the end of the day that the thought of driving up to Oranjestad or the high-rise hotel area (20-30 minutes away) for dinner is completely out of the question.

Friday, November 1, 2019. Got up at 6:25 so I could go for a run, then drove to the hardware store to buy another can of white paint for the SteppIR elements, then back to the house to meet our self-imposed schedule to be in the air by 8. However, when JP showed up at 8 and we all headed out, we were stopped for a while by an intense rain shower. Fortunately, it did not last long, dried quickly and there was no recurrence. (picture next page)



Rain, fortunately only for an hour or so



The 45 with the 2040 installed

Today Ed and John first installed all the elements in the JK 2040. We sent them up the 40m elements one by one to avoid damaging the external loading coils, and in groups of 4 half elements for the 20s. It took them about an hour and half to do it all. They reported that it was a little off-putting at first, but after a while it wasn't very difficult. I had the easiest job of the morning, to sit in the shack for much of the time turning the Green Heron rotor controller for our new Yaesu 2800 so they could minimize repositioning the man lift.

The analyzer in the shack showed that 40 was resonant at just about 7000 kHz; since it was constructed using the manual's CW setting, the resonance point should have been 7070 kHz. The SWR at the shack at resonance was 1.3 to one. The 2:1 SWR bandwidth was about 200 kHz. John got Ken on the phone and he recommended shortening the driven elements one inch per side and the reflectors two inches. He said that generally each inch of the driver shortening raises the resonance 25 kHz. Twenty looked very good, but the resonance was at about 14225, with less than 1.4 to one SWR on the whole band. To try to reduce the SWR on 20, Ken recommended trimming D1 only by 1/2 inch per side. John and

Ed made those adjustments.

After we knocked off and had a Belashi, I went to the Calidad for a small grocery refill. We have been going through a huge amount of liquids; I've been drinking a lot of fruit drinks, which are widely available here in non-refrigerated packs (as is sterilized milk in different flavors). For lunch I even had cereal with chocolate milk – what a guilty pleasure.

JP and I uncoiled and labeled the 40m, 20m and 80m feedlines, and took off the existing jumpers – actually an annoying project because they have been weather-sealed. We fed them up the tower with the rotor control cable to hook up our shiny new 20/40 like a real antenna. Meanwhile, John and Ed were finalizing the rotator loops, weather proofing coax and control cables connections and positioning the cables on the tower. Note that this time we used special padded cable-ties procured from Metalworks/KF7P to attach cables. In 2008, we had used tape because of concerns over cable-ties “cutting” into cable jackets. Others have reported (e.g., the PJ2T team and P40W) that tape has a tendency to trap water and exacerbate corrosion (although that has not

generally been our experience), so this time we decided to use the padded cable-ties.

Next step was to turn to the north 25. Raising the first two sections (which JP and I had assembled) was hard since they kept getting stuck in the tree, but eventually three new sections were standing above the seven-foot base that JP installed. We rigged up one permanent guy to the northeast anchor, and three rope guys. My hardhat came in handy when I was helping Ed install the first new section (our doubled 20 footer) onto the base section that JP had installed. While standing a few feet up the tower, Ed dropped a punch and I bent to pick it up. When I straightened up, I heard but hardly felt my hard hat bonk against the corner of the air conditioner in the front bedroom. Without the hard hat it would have been a serious jolt.

The north 25 is up



For dinner we ended up back at Sensei Sushi for some more excellent sushi. We discussed our growing realization that we aren't going to finish everything on this trip. We still want to at least get the 10/15 up tomorrow and install the south tower, with or without the Mid-Tri on it. Also needed are some cable dressing and guy wire adjustments to the 45, and Ed is going to try to put Teflon sheets between the coils of the three-turn 40m shunt coil and tape the turns together, in an attempt (recommended by Ken) to get more inductance at the feed point to provide a better match.

Saturday, November 2, 2019. After going to bed at a little after 10 and sleeping very soundly, my alarm woke me at 6:35 and I went out for a Linear Park run for 35 minutes or so. Sweaty but satisfying. Much of the morning was spent fiddling with the 2040, including adjusting the 40m coil (Ed is going to try to put Teflon sheets between the coils of the three-turn 40m shunt coil and tape the turns together, in an attempt recommended by Ken to get more inductance at the feed point to provide a better match), dressing the rotor loop, pulling cables up the tower from the reconstructed catenary line from the shack to the tower, etc., all of which took hours of work for four people in the hot sun. We ended up with the 160m and SteppIR feedlines coiled at about 40 feet ready for future use.

While the modification to the 40 meter hairpin coil resulted in a reasonably acceptable SWR curve, the dip should be deeper. Ken has agreed to send a replacement hairpin coil with more inductance (basically another turn on the coil) and the plan is to install it when we finish the rebuild project on a return effort in January or February 2020.

After lunch, we declared the Rohn 45 tower essentially completed for this trip – and by the way it looks simply beautiful gleaming in the sunlight. We also tightened up the guy wires using the Loos gauge to reasonable consistency. We then turned our attention to the north Rohn 25 tower, which needed two more sections and its top section. The main time consumer there was working out the guying, a lengthy process as described above.

At the end of the day, the tower had all its sections, all its guys, and the rotor partly bolted in. Ed and John didn't quit till it was just getting dark enough to be inadvisable to be operating heavy equipment.

We took Cris and JP out to a restaurant called the Fish House, which Lisette had recommended as having the best fish on Aruba.



Cris (P43C), JP (P43A), Ed, John, Andy at the Fish House.
This is the closest to the water we got in the whole trip.

Sunday, November 3, 2019. The plan was to get cranking on the 1015 this morning, but things got off to a slow start, and then everything took longer than anticipated. The result was that we did get a working antenna by nightfall, so that is the good news. I got up at 6:25 and went for my usual run, this time meeting no more than a dozen or so early souls out on a Sunday morning.

John and Ed successfully mounted the rotor, but yesterday the Green Heron box that was supposed to work with it blew a fuse while hooked up to the rotor just using the rotor pigtails. [Consultation with Jeff, the owner, by phone from the Admiral's Club in MIA revealed that this should not be a problem, though he advised us to use 3 amp fuses instead of the 2 amp ones supplied.]

This morning when asked to rotate the antenna with the Tailtwister box, the brake wouldn't release. The green light on the box lit up, but there was no power getting to the brake solenoid. The problem was diagnosed to be a broken ground wire at the tower end of the cable from the shack to the Weather Pack connector; we sent up the connector kit on the pull rope, with which Ed fitted a new Molex pin male terminal to the connector – all of this took over an hour to fix.

Of course, before reaching the point of rotating the antenna, they had fully installed the rotor, and we had gin pole lifted the 11-foot long chrome-moly mast up to them to be stepped. (See Pictures next page)



John and Ed taking the 1015 boom to the tower



Installing the 1015 36-foot boom

They spent a lot of time dealing with the coax jumpers, weatherproofing the joints (on this tower, as on the Rohn 45 tower, each juncture was first covered with a layer of electrical tape, then with a layer of Rescue tape (vulcanizing tape) and then with a final additional layer of electrical tape for UV protection), routing the coax, etc., with the result that they didn't start putting on the 22 half elements until 4 p.m. or so. When that was done, back in the shack the RigExpert showed 15 pretty flat across the band, but 10 had a resonance at about 28500 with a second dip at 28900. Ken on the phone suggested lengthening the drivers $\frac{3}{4}$ inch and D1 $1\frac{1}{4}$ inches. Though the light was fading they went up and made the adjustments.



Adding elements to the 1015

While the result is in the range of acceptable, Ken is eager to guide us to a more optimal result. He has agreed to send us a replacement 10m hairpin coil (with less inductance) and recommended a small adjustment of the D1 elements. The plan is implement these tweaks when we return in February.

In the meantime, JP and I did a lot of yard and tool organizing, including moving all the old aluminum into the yard from the cunucu (from which JP thinks it might get stolen), putting away tools, flattening all the cardboard boxes for disposal, grinding off the thrust bearing on the south 25 sections so the top sections could be resold, moving them into the cunucu, moving the Mid-Tri into the garage, organizing parts left over for the JK antennas, etc. All the time being ready to drop everything and provide whatever ground support was needed for the lift crew.

Accomplishments:

- 1) Two new towers safely installed. Old ones safely dismembered and removed.
- 2) Two new antennas safely installed.
- 3) SteppIR ready to have its elements attached and to be carried up and mounted. Mid-Tri needs a tower and its element halves attached.
- 4) No injuries other than a few minor scrapes and cuts endemic in such concentrated mechanical work.
- 5) No personality disputes.

Major items left for future work:

- 1) Install south 25. Mount rotor and Mid-Tri.
- 2) Install stand-off brackets for 80 and 160 on Rohn 45. Install and optimize 80 and 160 meter wire antennas.
- 3) Install SteppIR on Rohn 45.
- 4) Get replacement 40m and 10m hairpin coils from JK Antennas and swap in.
- 5) Tweak the 10m driver and D1 with Ken's help to optimize SWR.



Ready to leave. Two towers up!

NCCC News

Previous NCCC Meeting:

The December NCCC General meeting was a Webinar, held on Sunday, 15 December, 2019

Topic: Tower Safety with K1IR – The No Falls Alliance

Presented by – K1IR, Jim Idelson, Sudbury MA.

Attended by about 26 despite major football competition.

Link: <https://zerofalls.org/>

As a result of K1IR's inspirational, inspiring and technically rigorous talk the NCCC BOD voted to support Jim's Zero Falls Alliance with a donation/membership, joining several other major contesting clubs.

BoD meeting minutes

The monthly minutes from the NCCC BoD meetings are available in the members only section of the NCCC website. See <http://nccc.cc/members/minutes.html>

Tube Of The Month

Norm, N6JV

Visit the Museum: www.n6jv.co



Electron-Ray Indicator Tube

In 1932, Allen DuMont developed a small cathode ray tube that was inexpensive and could be used as a tuning or bridge balance indicator. The 6E5 of 1935 was the first production tube and this type was commonly used in AM radio receivers and as frequency netting indicators in military transmitters like the ARC-5 series.

The tubes were commonly called “magic eyes”, “cat eyes” and “tuning eyes”. The tubes were constructed with a “V” shaped fluorescent anode at the top. An electrode is placed near the central cathode so as to make a shadow on the anode. When increased voltage is applied to this control electrode, the shadow will appear to “wink” when the voltage is maximum. The AGC circuit can supply this voltage and will indicate when a received signal is on frequency. The tubes were still being used into the 1960s and later. My Heath-Kit Condenser Checker has one. To boost the control voltage, a triode was often constructed inside the envelope.



NCCC Membership Information

If you wish to join NCCC, you must fill out an [application for membership](#), which will be read and voted upon at the next 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 young and been a NCCC Member for 20 years are eligible for Honorary life membership. Contact secretary.nccc@gmail.com

JUG Articles Wanted!

Without your help we cannot reproduce a quality newsletter so please consider submitting a suitable article!

We welcome any and all relevant articles for inclusion in the JUG.

The soft deadline is 7 days before month end. The preferred format is MS Word, Arial 12 point. Pictures should be full resolution. Send your material to Bill, N6ZFO at n6zfo@arrl.net . Don't worry about the formatting, we can take care of that if necessary! For pictures: Include them in-line with the text, OR identify them by file name at the insertion point.

Northern California Contest Club Reflector—Guidelines

This reflector is devoted to the discussion of contesting.

This includes contests, station building, dxpeditions, technical questions, contesting questions, amateur radio equipment wants/sales, score posting, amateur radio meetings/conventions, and membership achievements.

This does not include personal attacks, politics, or off-subject posts which will be considered a violation of the Guidelines.

Violations may result in removal of the violator from the reflector and possibly from club membership in good standing.



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