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Northern California
Contest Club



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NCCC Net
Thursday 9 PM
3853+/-

Our Next Meeting Joint Meeting With MLDXCC

July 23, 2005: 12 PM

Program: DVD showing the A71AJ super station in Qatar-United Arab Emirates

Location: Senior Services Center, 229 New York Ranch Road, Jackson, CA.

Directions: Take State Highways 49/88 to Jackson. From the West (Highway 88) or the North (Highway 49), go through the traffic light at 49/88 intersection and proceed to the bottom of the hill, turn left at the 2nd stop sign (Safeway and Chevron gas station will be on your right), onto Highway 88 East toward Lake Tahoe. Follow signs to Senior Center and turn left onto Court Street (approximately 1 mile). New York Rand Road will be the first stop sign (1/4 mile). Turn right and the Senior Center will be on the left approximately 100 yards from the intersection and behind an apartment complex (signs will direct you to "Oak Manor"). Parking is available in both the front and the back. Additional parking is available next door at the Quail Hollow Professional Center with stairs at the rear that lead to the Senior Center. Please do not park in the spots marked for the Oak Manor Convalescent Home.

NCCC Officers

President: Mike Heideman, N7MH

mike_heideman@hotmail.com

VP/CC: Kurt Andress, K7NV kurt@k7nv.com

Sec/Treas: Ed Muns, W0YK w0yk@msn.com

Directors

Tom Berson, ND2T berson@anagram.com

Matt Thomas, WX5S mmthoma@attglobal.net

Jeff Stai, WK6I jds@twistedoak.com

Marc Ziegler, W6ZZZ ziegler@accesscom.com

Rusty Epps, W6OAT w6oat@sbcglobal.net

Webmaster: Ed Muns, W0YK w0yk@arri.net

JUG Editor: Rob Brownstein, k6rb@baymoon.com

VP/CC

Kurt Andress, K7NV

This month we have the IARU contest which has great activity for a summer contest. We hope to have some fun at N6RO's putting on a little SO2R demonstration for those who would like to see how some of us approach this style of operating. I hope to learn lots myself!

Chuck, AK6DV is organizing the NCCC teams for the NAQP RTTY contest on July 16 & 17. I encourage anyone who has RTTY capability to check in with Chuck and get on an NCCC team. This is a fun contest with lots of activity on all bands and the time allowed for operating (10 out of 12 hours) is family friendly.

Next month we will be going after our first big Club efforts in the cw (Aug 6-7) and phone (Aug 20-21) NAQP's. Please try to see if you can get these dates clear for some contest fun.

The NCCC Thursday night Sprints have been fun and we've had some good activity. New guys around the Country have been joining in each week and all seem to be having a good time. Most of the comments indicate that more activity would make the practice contests more fun for everyone, so give it a try if you can take 30 minutes out of that evening and play with the gang.

Contest Clinic At N6RO

The IARU contest provided a great backdrop for Ken's Contest Clinic. A collaborative effort, the clinic included: a high-rate SSB demo and recording by N6BV, using his Orion and CT software, and the yagi-stacks on 20 or 15m. Then, there was some practice by attendees who wanted some coaching by Dean.



Dean, N6BV, demonstrates SO2R on SSB.

For aspiring SO2R operators, Ken's SO2R CW demo and recording by N6RO featured FT1000MPs, DXDoublers, and TRLog, followed by critique, practice and coaching by the master.



Ken, N6RO, demonstrates CW SO2R.

Then K7NV did an SO2R demo, using his custom audio switching box, on the same radios. So, attendees got to see two approaches to this Top-Gun mode of CW contesting.



Kurt, K7NV, describes his set up before demonstrating his version of CW SO2R.

After the demonstrations, participants could try out what they had learned on a pair of stations. And, to top off the event, the world-famous BBQ chef, Matt WX5S did his magic. Some participants stayed after the meal to continue playing with new skills on CW and SSB.

The Locust, Rick, K6VVA, did some special video taping, using stereo audio, to capture the full effect of SO2R. A DVD will be available soon.



Here's 4-over-4 on 40 at N6RO.

Feedback

Just wanted to thank Ken and all the other "N6RO staff" for hosting the "SO2R clinic" yesterday. Besides being incredibly impressed with the antenna farm, I learned a lot and enjoyed the fine company of other NCC members. Only regret

I couldn't stay for the BBQ (and a sample of Jeff's fine wines).

Barry – K3KOA

If/when this happens again you won't want to miss this! Great people, a great station, and a great time! Thanks Ken!

Jeff, WK6I

Thanks to Ken and the "Staff" for the experience. Now I know what it is to make the rate meter exceed 200. Enjoyed listening in on CW over Mike's shoulder. Dean and Rick, thanks for the headphone octopus and the tape. Matt, awesome food. I'm still salivating. I would not want to miss any similar event. Ken, visiting your station is like a pilgrimage to Mecca.

Rich, NU6T

I was able to clear a few hours to visit at Radio Oakley yesterday and am glad I did -- it was a educational, entertaining, and enjoyable experience in all ways.

Thanks to the staff N6RO (our host), N6BV (SSB lead instructor), K7NV (CW lead instructor), K6VVA (videographer), and WX5S (chef, who I missed) and everyone who participated and contributed to make it a great day.

Mark, K6OWL

Thanks to Ken, N6RO, for hosting the IARU demo clinic this weekend! I had a ball working with the group of people who showed up wanting to do some hands-on operating of a big-gun station on SSB.

Dean, N6BV

What a great event (you should K your own B if you weren't there). It will also be known as the NCCC SO2R Clinic v1.0 ... and Dean/N6BV, Kurt/K7NV & host Ken/N6RO did a terrific job. I'm thinking a good Sub-Title would be "De-Bugging The Mysteries of SO2R Contesting" !!! What a tremendous educational experience for all.

Rick, K6VVA

The REALLY GREAT thing about yesterday's First Annual (I hope) SO2R and High-Rate Clinic, graciously hosted by N6RO at his legendary super-station in the

East Contra Costa sands, was how much everyone was willing to teach and to learn. Even the twin distractions of the chattering TV media, with its Klieg lights and makeup girls, and of the gourmet chef, with his amuse bouches and mouth-watering aromas, did not prevent the wisdom of the masters from getting across to the SO2R curious. It was theory and hands-on. There were hints, tips, coaching, encouragement, opinions, operating advice, station designs, war stories, tapes and logs for everyone. Congratulations to all who planned and executed this landmark event.

And thanks.

Tom, ND2T

(Photos courtesy of Barry, K3KOA)

Strays



Dave, WJ6O, doing IARU at K5RC. (photo courtesy of K5RC)



An official NCCC chronometer, the "Kick Butt" clock. (photo courtesy of W6SC)

Bouncing Back – Part Two

By Rob Brownstein K6RB

Fast forward the video tape to IARU weekend. K6RB starts at 5 AM local on 40 meters with the EF 240/230 at 80 feet. There are plentiful JAs and some others to work, so I spend about an hour running and S&Ping. Around 6 AM, with daylight just starting to break, I QSY to the Sigma 180S at 88 feet. Wow, I'm hearing JAs and a ZL, and a couple of Ws. I work them in a few minutes and QSY back to 40 meters where the daylight is beginning to weaken the JA influx. By 6:30 AM I'm off to 20 meters. Mostly east coast stations and Canadians are coming through but the noise level is high. I work about 30 more minutes and take a break at 7 AM.

By around 10 AM, I've had a little nap, showered, had breakfast and am ready to take another shot at it. Starting with 20 meters, I survey the band and start doing some S&P. Everybody I call comes back to me, almost always on the first call, even in pile ups. For the next few hours I am full SO2R on 20 and 15 – running on one and S&Ping on the other. Every now and then I check 10 meters quickly to see if there are any signals. Most of the action is definitely on 20 meters, and I'm feeling as if the signal is at least as good as it was with the old C31-XR. Both antennas had three elements on 20, but this one is about 20 feet higher (74 feet). On 15, the 5BA has 4 elements which again gives it parity with the C31. Here, too, I feel like my signal is at least comparable.

Finally, after a couple of hours, I hear the first 10 meter stuff – a PY2, PS2, and CX1. I QSY quickly and add those to the log. That pretty well sums up the four or five hours of daylight operation, SO2R on 20/15 with occasional jaunts to 10 meters. Around 4 PM I start listening on 40 meters. I'm not interested in a serious IARU effort; I'm testing my new toys. That's why I took the three hour break in the morning, and several hours of breaks during the day. I want to QSY to 40, early, to see how well the EF plays in a daylight path to north and east. So, for the next few hours, I'm SO2R on 40/20. Still, most of the good stuff is on 20

meters, including the first fluttery zone 29 stuff from Russia.

By dusk, the 40 meter ambient noise is getting quieter and the signals are getting louder. I'm definitely cracking more pile ups on first call. Good ol' 20 is still productive, and as I run 40 I'm S&Ping on 20. I'm having no trouble getting the UA3s, RA3s, LYs, SPs, and other east EU zones. Interestingly, I'm hearing very few west EU zones. I did hear a TU2 in Africa, but the operators sounded raw, and there were too many delays between QSOs, so I moved on. My buddies Bert (W5ZR) and Art (KZ5D) were pounding away at PJ2D, and I worked them everywhere but 80 meters. Bert sent "it's working, big signal" to let me know the new antenna system was doing the job.

Before calling it a contest at just after midnight, I had a chance to SO2R on 80/40. What a thrill. For the first time ever I ran stations on 80 meters. I was hearing DX – another first. I did something I never did before in a contest. With the rate meter still above 100 on 40, I went to 80 for the last half hour and focused solely on that band. What a joy.



Force 12 5BA, EF240/230 and Sigma 180S on a 72-foot crankup at K6RB.

So, just about six months to the day after a nasty storm took out my 50 foot crankup with the C31 and MAG240, I was back in action with a 72 foot crankup and a 5BA, EF 240/230

and Sigma 180S – and having one heck of a great time, to boot.

Rewind

At the end of Part I, Steve (K7LXC) and I had cut up the mangled tower and yagis, dug a big hole, set the new tower base into the retrofitted footing, and poured the concrete. US Towers let us know it would be another month before the tower was delivered, so Steve went back to Washington, and I finished up the preparations of the new yagis.

About the middle of June I get an email from Steve telling me that US Towers will be delivering the tower on Tuesday, June 28. The tower is scheduled to arrive between 8 and 9 AM, and Steve along with a crane and crane operator are supposed to arrive at 8 AM. I'm a little skeptical but optimistic.

Steve shows up at 7:30 AM. So far, so good. The crane shows up at 8 AM. Even better. And, the flatbed truck with the tower arrives at exactly 9:02. Yes!

First things first

The yagis are stacked one above the other in the backyard, the crane and flatbed truck are in the fire road, the 80m rotary dipole is lying in my long driveway, and the 20 foot chromoly mast is alongside the fire road.

Just before the flatbed truck arrived, the crane operator pulled deep into the fire road giving the truck room to back in. That would allow the crane the room to pick up the tower and lift it off the truck. In relatively quick succession, the tower is lifted off the truck and quickly hoisted above the wooden fence that surrounds the tower footing. With Steve guiding it, it is lowered onto the new base and bolted securely.

Before the mast can be put in place, the rotator has to be mounted. However, you cannot mount a rotator in a nested 72-foot US Tower. There are simply too many interleaved sections and no space to slip the rotator in and secure it. So, we connect the power to the motor and the tower is raised for the first time at the new site. Steve brings

it up just far enough to gain access to the rotator mounting plate. With galvanized pipes blocking each tower section should the cable fail, he climbs up and mounts the rotator. At that point, the crane raised the mast over the fence and above the top of the tower and Steve guides it through the thrust bearings on top. In a few minutes, he has the mast tightened to the rotator, and everything well centered to allow smooth, non-erratic rotation.

The EF goes on first

The 5 BA is ready to go, but it is underneath the EF240/230. So, we decide to hoist the EF out of the yard and into the fire road. There, with Steve in the crane's man basket, we adjust the linear loading and hoist Steve and yagi up to measure center frequency and SWR at about 25 feet above the turf. After a couple of iterations, we're satisfied with the readings, and Steve and the yagi are pulled up and swung over allowing him to attach the EF to its mast mount.



Steve, K7LXC, mounts the EF240/230 to its mast plate.

Then comes the 5 BA

We did a replay with the crane hoisting the 5 BA out of the yard, but this time, with no adjustments to make, Steve and the 5 BA are swung into position for mounting it to its mast mount.

In preparation for the Sigma 180 S, Steve loosens the boom clamps on both antennas and angles the elements toward the ground. This will allow him to more safely approach the top mast clamp with the Sigma 80 without risk of bending the other yagis' elements. I would never have thought of that!

The Sigma 180S

The Sigma 180S is an 80 meter rotary dipole. Both Ed (W0YK) and Rick (N6XI) were both

bullish about the performance of theirs, so I felt more confident ordering mine. After a chat with Tom, N6BT, I felt that I could have all three antennas on the same mast, pointing in the same direction, with acceptable levels of interaction.

But, before you can mount the 180S, you have to adjust it for center frequency and minimum SWR. The two base coils are pretty hefty beasts. Each is fixed in position nearest the center while the opposite end is adjusted using a U-bolt. Once you achieve your center frequency target, you then permanently affix the outer ends of each coil. At least, that's supposed to be the procedure.

The two coils are covered with a PVC tube and a pair of covers with a hole in each center. Once the adjustments are made, you're supposed to slide the PVC back over the coil and push on the two covers for each coil.

Well, when Steve lifted the 180 S onto the man basket and rode up to 25 feet, his antenna analyzer found no dip anywhere near 80 meters. I suggested that maybe the balun was faulty (even though it was new), and we took it off along with the hairpin. Aha, there was now a deep dip around 2.9 MHz. So, I took out a used but known-good balun and we tried again with analyzer. Again, there was no dip.

So, we decided to do the center frequency adjustment without the balun and hairpin. However, as Steve moved the coil ends out, the frequency would go up to 4.0 and then down to 3.7. We discovered after removing the PVC tube, that some of the inner coil turns were pressing against each other – effectively lowering the inductance and increasing the center frequency. Whenever we slid the cover back into place, it had a tendency to push turns together, screwing up the adjustment. So, we literally hack-sawed the tubes off of both element halves and discarded them.

Now, with the tubes off, we decided to simply stretch the two coils each about 9

inches, end to end, and affix them. The cut-and-try process just wasn't working. Since I use a tuner for 80 meters, anyway, I was just interested in getting the center frequency somewhere near 3.525 MHz. So, I had Steve just go ahead and mount the 80 meter rotary, with the balun and hairpin, after we set the coils at 9 inches.

Once more the crane went up, and Steve mounted the Sigma to its mast plate. By this time, it was around 3 PM. The crane had been there since 8 AM (7 hours), and everyone was pretty tired. So, we agreed to stop at that point and resume in the morning.

Finishing touches

Having just started a new job, I couldn't stay home on Wednesday. So, I left at 8 AM Wednesday morning and checked in with Steve by phone periodically. He had returned that morning, connected the mast switches below the 5 BA on the mast, connected the coax jumpers to the correct SO-239s on the switches, and connected the two main coax runs. When he left around 3 PM on Wednesday to return to Washington, the yagis were all aligned and aimed at true north. The coax jumpers and main coax lines were all connected, as was the rotator cable.

Trouble shooting

When I got home around 6 PM, the tower was at near full height, and everything was connected. I started checking the SWR on the two radios connected to the two mast switch controllers. As expected, 80 meter SWR was high at 3.525, but was dipped around 3.4 MHz. I could probably have stretched the coils another inch or two. Oh, well.

The SWR on all the other seven bands were good. I turned on the radios and the RAC contest was in full swing. So, I did a quick look at the rules, set up RAC module on WriteLog, and started making QSOs on 20 and 40. Everything looked good. After about 45 minutes, I stopped.

On Thursday, after coming home from work, I started checking rotation, SWR, etc. I found that on 40 meters, when I rotated the system between bearings of 60 and 90 degrees, the

receiver noise dropped down and the SWR shot up. My first thought was something was hitting something on the 40 meter antenna, as it turned, but when I found the same condition with the 15 meter antenna, I knew the problem was in the main coax run from off that switch.

LMR 400 is low-loss coax. It is also solid-core coax. It does not like to be moved around once it's set. It is not conducive to being connected to a mast switch that moves around. I presumed that the problem was related to motion of the cable, so I lowered the tower and climbed up to check it out. Sure enough, the rotation had broken the solder between the PL-259 barrel and the coax shield. The whole connector turned freely in my hands. As it turned, the shield would make intermittent contact with the PL-259 barrel. Replacing that PL-259 with a new one, after splicing two inches off the end of the cable, alleviated that problem.

On Friday, I was in the midst of a nice QSO on 20 meters when all of a sudden the receiver noise went down and the SWR shot up. Oh, no, I thought. It's the other main cable. However, this time, I tried the 10 and 30 meter positions, and those antennas were still looking good. So, I knew it wasn't the main cable. Even worse, it had to be either the 20 meter jumper or 20 meter balun. In either case, the two were too far from the boom center to be reached while standing on the tower. I would need to bring in a cherry picker, and those go for \$300 per day, one day minimum.

As I was mulling over the problem, and thinking about the money and inconvenience, I casually switched the matcher to the dummy load position and hit the key. Aha, 20 meters was still showing high SWR. It wasn't the antenna system after all; it was the radio!

A quick review of the schematics for the FT-1000 showed that several low-pass modules are switched in the PA section when you change bands. Most likely, one of the low-pass components had gone bad on the 20-meter module. What a bummer. The IARU

was the following weekend and I had no 20 meters, or did I? Why not simply switch controllers between the radios. The one with the faulty 20 meters would now be connected to the controller for 160/40/15, and the other controller for 80/20/10 would be connected to the FT-1000 that was working on 20 meters.

Stop the tape

Well, that's exactly what I did, and I had all the bands except 160 to play with during IARU. So, at this point I can say, unequivocally, that the new tower and antennas are working better than I expected. If there is any interaction between the three antenna units, I can't tell. Certainly, the SWR on the 5 BA and EF are all where they should be. The only antenna with a center-frequency issue is the Sigma, and that's because the coils were not set correctly by us. However, with the Ten-Tec tuner, that antenna really plays, and with the SWR set at 1:1 at 3.530, I have 2:1 bandwidth of from 3.500 to 3.580. That's plenty good for any contest in which I am operating CW on 80.

Next steps

I'm planning to splice in two sections of RG-213 between the mast switches and the ends of the two main cables. That will allow the RG-213 to move with the antenna rotation leaving the LMR400 essentially stationary. This is simply to reduce the likelihood that the LMR400 center conductor will be bent repeatedly until it pierces the dielectric and shorts against the shield. I am also planning to put up a single-band, shortened 160 inverted vee with an apex at 72 feet.

In retrospect

I can't begin to tell you the sinking feeling I had when I saw the old tower and yagis go down last January. What a feeling of helplessness. But, after six months of making do with an AV-640 on my chimney, I have a new tower and antenna system that seems at least as good as the one it replaced, plus I have gain antennas for 12, 17 and 30, and an 80 meter rotary. I guess I'm feeling a lot like anything worth having is worth waiting for. It took six months, but it was worth it.

-- CL --

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ANAHEIM, CA

(Near Disneyland)
933 N. Euclid St., 92801
(714) 533-7373

(800) 854-6046

Janet, KL7MF, Mgr.
anaheim@hamradio.com

BURBANK, CA

2416 W. Victory Bl., 91506
(818) 842-1786

(800) 854-6046

Eric, KA6IHT, Mgr.
Victory Blvd. at Buena Vista
1 mi. west I-5
burbank@hamradio.com

OAKLAND, CA

2210 Livingston St., 94606
(510) 534-5757

(800) 854-6046

Mark, W17YN, Mgr.
I-880 at 23rd Ave. ramp
oakland@hamradio.com

SAN DIEGO, CA

5375 Kearny Villa Rd., 92123
(858) 560-4900

(800) 854-6046

Tom, KM6K, Mgr.
Hwy. 163 & Claremont Mesa
sandiego@hamradio.com

SUNNYVALE, CA

510 Lawrence Exp. #102
94085
(408) 736-9496

(800) 854-6046

Rick, N6DQ, Co-Mgr.
Howard, W6HOC, Co-Mgr
So. from Hwy. 101
sunnyvale@hamradio.com

NCCC
1560 Klamath Drive
Sunnyvale, CA 94087

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