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## NCCC/REDXA/MLDXCC Meeting

#### Saturday 31st October

#### Location:-

4163 Suisun Valley Road Fairfield, CA 94534

#### Program:

- Stu K6TUI "Introducing a New Remote Contest Station"
- Paul N6PSE "DXpedition to Eritrea E30FB

See <u>38</u> for full details

## **President's Report**

Hello KB'ers,

I was just thinking about the first time I tried RTTY in a contest. I think it was in the late 1990's, and I got into it because of my son.

My son wanted to get his ham license because he liked hanging around me and my ham radio friends when we were doing shack or antenna projects. He didn't get his license because he wanted to talk on the radio. He had no interest in phone or CW but just wanted to help set up and wire things in the shack and maintain the shack computers.

I wanted to get my son interested in operating, so I suggested he try RTTY since he was into computers. I told him to figure it out, set up the radio and we would try a contest with my FT-767, 30S-1, and the only antenna I had, which was a full-wave 80 meter loop fed with balanced line (I did all of my serious contesting as a hired gun at another station).

We tried the ARRL RTTY Roundup in the Multi-Single category and the kid took to it like a fish takes to water. He ended up doing most of the operating. After that, he did the RTTY RU's on his own. I just checked the scores back in the early 2000's and he was doing well over 500 Q's and placing fairly high in the Easter Massachusetts Section....all with the single wire antenna, which performed well on 10-80 meters.



# **Officers:**

President	Bob Hess	W1RH	w1rh@yahoo.com
Vice President /Contest Chair	Steve Dyer	W1SRD	w1srd@arrl.net
Treasurer	Dick Wilson	K6LRN	treasurer.nccc@gmail.com
Secretary	Joanna Dilley	K6YL	secretary.nccc@gmail.com
Past President	Rick Karlquist,	N6RK	richard@karlquist.com
Director	Rusty Epps	W6OAT	w6oat@sbcglobal.net
Director:	Rich Cutler	WC6H	wc6h@yahoo.com
Director:	Ron Castro	N6IE	ronc@sonic.net

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CQP Chair	Kevin Rowett	K6TD	k6td@arrl.net
CQP Certificates	John Miller	K6MM	k6mm@arrl.net
K6ZM QSL Manager	George Daughters	K6GT	k6gt@arrl.net
K6CQP,N6CQP,W6CQP QSL Mgr	Ed Muns	W0YK	w0yk@arrl.net
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JUG Editor jug@nccc.cc	lan Parker	W6TCP	w6tcpian@gmail.com



NCCC Net Thursday 8 PM Freq: 3.610 +/-

#### NCCC

Visit the meetings page of the NCCC website <u>here</u> for details of the next meeting

## **NCCC Membership Information**

If you wish to join NCCC, you must fill out an <u>application for membership</u>, which will be read and voted upon at the next monthly meeting. (<u>PDF application form</u>)

To join, you must reside within <u>club territory</u> 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).

A couple of thoughts:

1 – If you want to get a young kid into contesting, I'd suggest RTTY.

2 – I probably would still be a CW/SSB guy, with no RTTY experience, had my son not done the original setup and interface between the radio and the computer.

I absolutely love CW contesting and I tolerate SSB contesting, but RTTY contesting has really grown on me in the past couple of years, especially since I began doing it with two radios. The rate of fatigue is nowhere near what you experience with CW or SSB and, frankly, it's really fun now with the terrific computer interfaces offered by N1MM and Writelog.

The most difficult part of RTTY contesting is the initial setup. For many, it's just not easy and I do believe that's the main reason we still have many members who have not yet tried a RTTY contest.

A few months ago, I built a FSK interface for WC6H. The day before NAQP RTTY, I installed it and did a little tutorial for Rich. That night, we did some practice on 10 meters. The next day, Rich made something like 400 Q's in his first ever RTTY contest!

In the next few weeks, I'll be doing the same installation/tutorial for several of our club members.

Why?

NCCC has been a strong RTTY competitor for several years now and we want to shoot for a KB win in the 2016 RTTY Roundup. The competition will be tough, but I truly believe we can win this one. We're so fortunate to have some of the best RTTY contesters in the world in our club. With W0YK and WK6I leading the way, we have a strong start towards a win in 2016 RTTY Roundup.

I have found over the years that it's the club with the most logs that generally wins a major contest and we're hoping for a large log count for the RTTY Roundup. Personally, I don't care if a member makes 12 Q's or 1200 Q's. I just want to see our members participate in a major club effort in one way or another.

For those of you who have grown tired of phone and CW contests, or perhaps have had your voice or hearing wear down over the years, RTTY contesting will open up a whole new world of fun on the radio for you. If you have never operated RTTY and would like some assistance getting started, please contact me. If I can't help you myself, I'll find someone in the club who can. That's a promise! We want your points and we want you to discover a new fun way to contest.

I hope to see many of you at the Joint meeting in Fairfield on the 31st, featuring the Redwood Empire DX Association, the Mother Lode DX/Contest Club, Pizza Lovers 259 and, of course, the Northern California Contest Club. Typically, this meeting attracts an attendance of nearly 100. We have some terrific speakers including N6PSE, K6MM, and K6TU. W1SRD and I will also say a few words about NCCC's contest strategy in 2016. Spouses welcome! I want to thank Joanna, K6YL, and Rick, N6DQ, for their hard work at Pacificon. Joanna, our Awards Manager, deserves a special award for her work setting up the Club table, on her third anniversary, which was spent at Pacificon. And how about that W1AW/6 station that Rick and Joanna set up? This was absolutely the most awesome M/M portable station I have ever set eyes on!

Another shout-out goes to Rick, N6XI, and Anne for throwing a wonderful BBQ at his spectacular QTH in Truckee. It was really nice to see all of the high-elevation guys. I believe Rick said that the attendance was at an all-time high of 32.

Last, but not least, I have seen all of the emails flying from those on the CQP50th committee. By the end of the week following the contest, we had over 900 logs submitted. This is a hard-working group and they pulled off the best 50th anniversary party ever!

KB Bob W1RH



## W6YX-1941 Mike, N7MH

The two men in the photo are former NCCC member Cam Pierce (K6RU - SK) and Mike Villard (W6QYT - SK).

In the 80's Cam was a mentor to younger NCCC members such as Dan K6IF and lived nearby in Portola Valley. I also recall him occasionally visiting W6YX in the 70's. I distinctly remember a visit in which he added a damping circuit to our Collins S-Line transmitter (32S1) to reduce key clicks that were affecting him at his nearby station.

Dr. Villard was the station trustee and faculty sponsor for W6YX from the 1940's through the 1980's. He was well-known for having been on one end of the first SSB QSO on the ham bands and for publishing many articles in QST. Villard's father (O.G. Villard Sr) had been a prominent journalist and civil rights pioneer.

This same QSL without the 1941 scrawled on it is on the club's history page. <u>http://w6yx.stanford.edu/old/history/</u>

## **VP/CC Report**

The '15-'16 contest season is upon us. CQP, CQ WW RTTY and phone are already behind us. Sweepstakes is just around the corner and RTTY RU will be here in no time so warm up those diddles.

There was some confusion on the reflector from the last JUG about NCCC's Sweepstakes goals. Sweepstakes 2015 is NOT a focus contest, but that does not mean we shouldn't have goals. The #1 goal for NCCC is to get 200 participants on the air for each mode. The #2 goal is to support the local clubs in their efforts to win this year. Coordinate with your local clubs to submit logs. If you don't belong to one of the local clubs, consider joining before SS, otherwise submit your log for NCCC.

We are asking all NCCC members to get on and work as many other

REDXA/MLDXCC/PL259/NCCC members as possible. There should be more NCCC calls in the log this year than PVRC calls. This has not been the case for the past couple years. For those members trying to win, this has had a measurable impact on final placement. Please support your fellow club members in their efforts to win and let's dominate the medium and local club categories. 200 logs is achievable and puts us in a winning mindset for 2016. Clubs like NCCC exist to win contests and the Unlimited gavel is the prize.

A few tips and reminders. Spend time calling CQ. With skimmers, spotting and SO2R, those that are serious will find you. When you are S&P'ing, spot NCCC members. I personally have found the rally's of little benefit. I suggest getting on 40/80 in the evening. No rally needed. Just get on! Saturday evening on 80M is a great time to work each other and will pick up the rate for every-one.

My personal goal is to work 95% of all NCCC members that get on. I look forward to many KB calls in the log!

See you in Fairfield this Saturday where SS and RU will be topics.

73, Steve W1SRD

# The 50<sup>th</sup> Running of the California QSO Party

By John Miller, K6MM

#### **CQP #1 – October 1966**

The very first California QSO Party was held in October 1966. Recently, Bob Beaudoin (WA1FCN), who operated in that very first contest, sent a scan of the results from CQP #1 in 1966. Since the copy was difficult to read, I have extracted the data as best I could, for this article. Here are the States and Operators who participated in CQP #1.

	CQP #1 - 1966					
STATE	STATIONS PARTICIPATING					
AL	K4GMR/4					
AZ	WA9SBI/7, WA7ETQ, WA7CMP, W7ENA					
СА	WA6URY, W6CUF, WB6KIL, WB6GUE, K0GJD/6, K6QEZ, WB6HGU, W6ONG, W6ZGM, WB6IEX, WB6OLD, K6CQF, WB6EUZ, W6QFU, WB6FHH, W6CLM WB6RCC, WA6JOT, WB6KOS, WB6KIM, WA6JQP, WA6HQM, WB6DSA, W6MHI, WB6LCS, WB6RSS, W6ECQ/M, WB6TMC, WA6KHK, WM6TYD, WB6KZE					
CO	W0AGE					
СТ	W1BHV/1					
FL	WA4ECY, WA4LCO, W4ZOK, W4NTE					
GA	W4HYW, WA4EPM					
IA	WA0KST, WA0KXJ, W0RRS, K0UKN, W0JTC					
ID	K7CPC					
IL	WA9EJD, WA9FHC/9, W9WR, WA9FZR, W9TCU, W9QWN, WA9NFS					
IN	W9FYM					
LA	W5BUK					
MD	W3AYS, W3GYF					
ME	KIGAX, W1MRQ, K1QFD, W1DMD					
MI	K8CCD, W8NFY(?), K8QKT, K9SFO					
MN	WA0KDI					
MO	K0JPL, K0YGR					
NC	W4MMD, WA4CTU, WA4ZQM, W4ZLK					
ND	WA0HYI					
NE	WA0HGY					
NH	WA1FCN, WA1CBP					
NJ	W2KHT, WB2MRA, W2IWP, W2LYO					
NM	K5WME, WA5OKW, W8BZY/5					
NY	W2DSC, W2ZV, WA2TIF, K1YRB/W, WB2MDH					
OH	K8VIX					
OK	WA5NOM					
OR	W7JHA, K7WWR, WA7DYK					
TX	WA5VQJ, WA5DTK					
UT	K7SQD, K7UOT					
VA	W4CKD, W4YGO					
WA	K6OFW, W7GYP					
WI	W9HHX, WA9AIB, WA9LHH, K9GDF, WA9FTS					
WV	WA8SDA, W8WEJ					

In 1966, a total of 112 logs were received: 31 from California and 81 from Non-CA

states. There were 42 CA counties were on the air in 1966.

Amazingly, four of the original 1966 CQP #1 California operators also participated this

year in CQP 2015. Here are direct quotes from three of them:

Bob, WA1FCN: "In 1966 CQP #1 -- I never thought I would be operating in CQP 50! From my records I find I worked 4 of the originals in CQP 2015 this year:

NN6CH/WB6EUZ; N6MU/K0GJD/6; WA6URY; K6TA/K6CQF

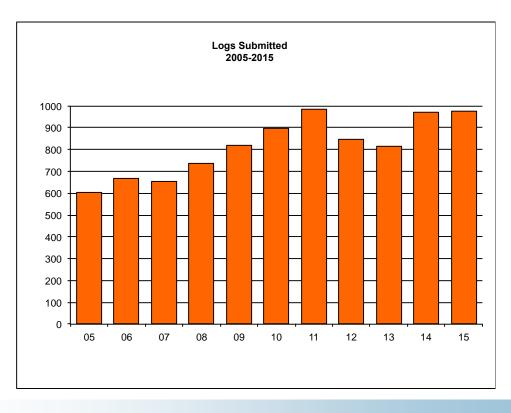
Thanks for the hundreds of CQP QSOs over the years guys."

Dan, WA6URY: "It was great to have been able to participate in the 1st and 50th CQP. When I operated in the 1st CQP [in 1966], I never could have guessed that I would someday be able to do it remotely a continent away in Tokyo. Thanks for the Qs!"

John, N6MU: "Was in the 1st CQP as K0GJD/6. Glad to make it to the 50th!!"

### **Gold Rush Fever**

CQP 2015 was quite a party. Over 970 "guests" showed up for the 50<sup>th</sup> running of this time-honored contest, which first ran in 1966.



Who came to the party this year? Well, some operators wanted to beat their own previous scores. Some wanted to set a new operating record. Some wanted to try a county Expedition for the first time. And some just enjoyed having fun working friends and other stations. But one thing was clear: Everyone wanted to try and qualify for the unique "Gold Rush" commemorative coin.



Anyone who submitted their log with 150 QSOs and who worked any combination of the 1x1 Gold Rush stations to spell GOLD RUSH will win a coin. CA Stations also had to work at least 75 Non-CA stations to qualify. All 24 Gold Rush callsigns were on the air for CQP 2015.

	K6	Assigned To	COUNTY		N6	Assigned To	COUNTY		W6	Assigned To	COUNTY
1	K6G	K6NR	SBER	1	N6G	W6TCP	TUOL	1	W6G	WC6H	CALA
2	K6O	W6TK	SLUI	2	N6O	N6RO	ccos	2	W6O	W6KPO	ALPI
3	K6L	K6LRG	ALAM	3	N6L	K6LA	LANG	3	W6L	K6YL	ALPI
4	K6D	WA6CWB	LANG	4	N6D	NX6T	SDIE	4	W6D	K6XX	SCRU
5	K6R	K6ZH	SDIE	5	N6R	AE6Y	AMAD	5	W6R	K6NA	SDIE
6	K6U	K6TU	SMAT	6	N6U	K6MM	SCLA	6	W6U	N6VV	COLU
7	K6S	K6SRZ	SONO	7	N6S	N6OJ	SONO	7	W6S	WK6I	CALA
8	K6H	W6KC	LANG	8	N6H	K6LRN	ELDO	8	W6H	W6SX	MONO

After log checking is finalized, a complete list of Gold Coin qualifiers will be published on the CQP website: <u>http://www.cqp.org/goldrush.html</u>

## Feedback – Some Direct Quotes

"This is only my second attempt at CQP but it's probably my favorite contest." (Phil, AF6GA)

"Always a fun contest" (VE3AD)

"A lot of activity. CA was coming in loud and clear in MN." (Paul, KCOYFC)

"That was a blast! For the short amount of time that I had throughout the weekend, each time I looked around there were plenty of stations to work. Congrats on a fine event." (Jay, W1UJ)

"Thank you NCCC for a great contest - I really like the GOLDRUSH coin addition." (Ray, N6HE)

"Thanks to the outstanding work of the sponsors of this contest." (73, Paul, NG7Z)

"Great participation as always. Missed sweep for first time in many years. Thanks to all who made it a fun QP." (73, Paul, N4PN)

"Finally got the County Sweep! Last year missed by only one and missed by two the previous two years. So what a great surprise when KE6WC from MEND County called me on 15 SSB at 2007 utc. Thanks to all of the CA ops for the fun party." (73, Mitch, NW0M)

"That's the most QSOs I've ever made in a contest. Saturday had some long, fast runs on 20 and 40. N1MM says I worked 42 counties. Really cleaned up on 1X1 calls. Thanks to the NCCC organizers for making this a huge anniversary party." (Gary, NA6O)

"Almost as much fun as chasing ARRL/RAC Sections." (George, W2RU)

"That was a RUSH -- GOLD that is. Having spent all of last weekend and several days on each side as a mobile in the Texas QSO Party I did not plan to get into the CQP, at least not in a serious way. But the idea of the GOLD RUSH intrigued me. ..... So I guess I followed the plan of the NCCC. Set the hook on Saturday afternoon some quick success in the spelling bee and reel them in on Sunday for the required 150 Qs and the GOLD RUSH. At any rate it was fun." (73, Chuck, NO5W)

"TNX to the California gang for hosting the best QSO party there is." (73, Stephen, KOOU)

"Lot of good operators. Lot of good fun. Thanks for all QSOs." (73, John, K4BAI)

"Thanks to the CQP organizers for all their hard work. This is a terrific QSO party. Congratulations on celebrating 50 years! Also, thanks to all the CA stations for getting out to all the counties and working us out of state stations." (73, Craig, K9CT)

"Great idea for the GOLDRUSH challenge coin this year. I know it kept me in the chair looking for those 1x1's and enjoyed working everybody else along the way. Worked the W6YX M/M on 5 bands." (73, Alan, W4ANT)

"Only my 2nd CQP and missed 5 counties, but managed to qualify for the Gold Rush coin if the log checking goes ok. Many familiar calls and good ops. Fun event." (73, Gary, AL9A)

"Congratulations to NCCC on the 50th running of what has perennial been the best state party on the calendar. There are other great ones, but CQP is like nothing else." (73, Bud, VA7ST)

"We operated from a cabin at the Butterfield Ranch Resort, south of Julian in San Diego County... This was mainly intended to be a fun, semi-serious yet semi-casual operation. A way for me to scratch my contest itch and be the hunted for a change, and a way to introduce KK6ANP to contesting. ...From that standpoint, it was a total success. We definitely had fun, we handed out the SDIE mult to a bunch of people, and some adult beverages may have been consumed along the way as well." (73, Andy, NY7N)

"Back and forth between CW and Phone. Only found 49 multipliers, but I believe I spelled out GOLDRUSH and I made more than 150 qsos, so that should qualify for the challenge coin!" (73, Josh, KC9UJS)

"Great fun, great to see friends and make new ones too. Super Birthday present, my bride encouraged me to play all weekend. See you next test!! (Dale, WC7S)

"Always a blast, and my favorite state level contest. I'll be back!" (Charles, N7MZW)

"Congratulations on 50 years of the CQP!" (David, N5DO)

"Thanks to the CQP organizers for making this an extra special CQP with the 1x1 calls!" (K6R = K6ZH team)

"First time operating the CQP. Congrats to CQP on its golden anniversary." (73, Dan, W7WA)

"The "rush for the gold" (coin) was fun and a nice idea. Good activity from the GOLDRUSH stations -- worked all eight letters well before the required 150 QSO plateau. Have never worked so many 1x1 callsigns in any single radio event -- there were lots this CQP!" (Bill, W1WBB)

"Only on for 4 hours per N1MM. Surgery late Thursday. CQP started Saturday morning. On drugs. Oxycodone industrial strength. SSB signals sounded like someone talking underwater. CW signals had an echo in my brain, but copied ok (I think). There should be a category for SOLPD (drugged)... Fun tho with the pink elephant and cheerleaders in the shack! :) (73, Art, W6KY)

*"K3/10 at 5 watts to a pair of selectable dipoles up about 50' and fed with balanced lines and tuners. Lots of activity from CA. Thanks for the fun!" (73, Dan, KE0G)* 

"We had a fantastic team this year in San Benito at K6N. We did experience propagation issues and computer issues Saturday afternoon into the evening, also extremely high gusty winds (25-35mph) that played havoc with some of our antennas. But they all survived and our dedicated operators continued on into the night. We had a very strong effort and made a number of new friends in the process. Wonderful experience, another awesome CQP! KB". (Phil, K6TT for the K6N team).

"I really enjoyed being one of the Gold Rush 1x1 stations and it was nice to work 20 of the other 23 Gold Rush stations. Thanks to all for another excellent CQP!" (73, Jim K6H-W6KC)

"Another very enjoyable CQP from Inyo County. Overall we had another great time. Thanks to everyone for the QSOs and to the NCCC for sponsoring this great contest." (73, Bob, K6ZZ for the K6Z team)

"What a great party the CA QSO Party is! Tons of stations to work on CW and SSB. Thanks so much to all for hearing my QRP station, FB job.. And congrats to the organizers and all participants for such a fun time!" (73, Todd, WDOT)

"Great contest - lots of good operators in California. Hate that I missed the commemorative coin (got all the letters but couldn't dig enough QSOs out of the weeds), but had a great time trying." (Bob, KV4LV)

### Summary

By most measures, CQP 2015 was a very successful event.

- All 58 CA counties were activated
- High # of logs submitted
- Gold Rush commemorative coin
- Great expeditions to some rare counties
- Many positive personal comments

We hope you had a chance to get on the air for the 50<sup>th</sup> Running of the California QSO party. It was great contesting FUN.

73, John, K6MM

## **Point Generator Profile**

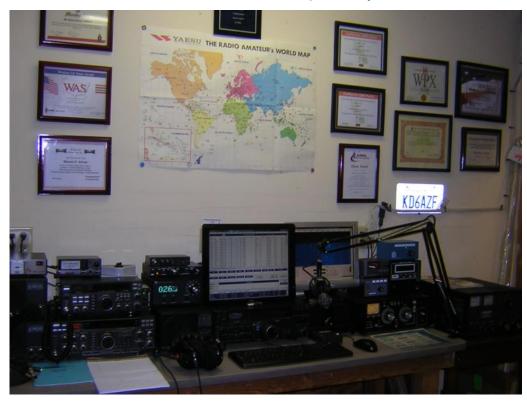
This month's featured point generator is Steve, K6SCA. Although a fairly new contester, Steve has been active in ham radio for years.

As a contester, Steve began by joining MLDXCC and started with the California QSO Party as his first serious contest. He has since joined NCCC. Steve's contest scores have increased significantly every year but this year is the big one.....gone is the fan dipole and up is the new tower and aluminum!

Name/Call Sign:	Steve Allred / K6SCA
Past Call Signs:	KD6AZF
Location:	3 miles east of Fiddletown in Amador Co on 2.33 acres @ 2,500 el.
In the Shack:	Main rig is a Yaesu FT-2000 w/ an RFSpace SDR-IQ, Yaesu FT990 (backup & RTTY) and a Yaesu FT-650 (12/10/6). Audio is routed through a Radiosport RS60CF (awesome headset) or a HM-10/Yaesu SP-2000 combo. Amplifier is an Ameritron AL80B, w/ 811H as backup. Palstar AT2K tuner, Pow er Master II meter (HF), Welz SP-420 (VHF/UHF)
Antenna System:	JK Yagis are mounted on a LM-470 tower with a Falcon (20/40) @ 74' and Quattro (10,12,15,17) @ 85'. Inverted "V" for 80 & 160 @ 73'. A Diamond CP610 is used for 29.60 & 52.525 MHz and a Comet CX-333 for 2/220/440 MHz. Mobile rig is a Yaesu FT-8900 quad band with a 120 watt PA for those 29.60 DX contacts.
Previously:	Kenwood TS-50 & fan dipole.
Future:	Learn CW, beverage antennas, second tower for 6 & HF, amp that follows rig.
Career:	RF System Engineer / 911Public Safety radio systems
Family:	Married to Sue (K6SZQ), a very understand and supportive wife. Four kids / five grandkids.
DXCC:	Worked 202 DXCC entities and counting. 196 on home wires.
Favorite Contest:	Only been contesting 3 years so they're all fun! Enjoy CW WW, because of all the DXCC entities. Privileged to work Cal QSO this year as N6C. Had a blast! Made 1,176 phone only Q's in 16 hours, w/ best score to date (136,146).
Tips:	When contesting keep your calls short, clear and concise. It's a contest, not a rag chew. When working DX, check to see if he's working split and listen for his call. Get it right BEFORE calling!

Help the Hobby: Mentor a new ham. Help them build a dipole & get on HF. Our hobby has far more to offer than just a rubber ducky.

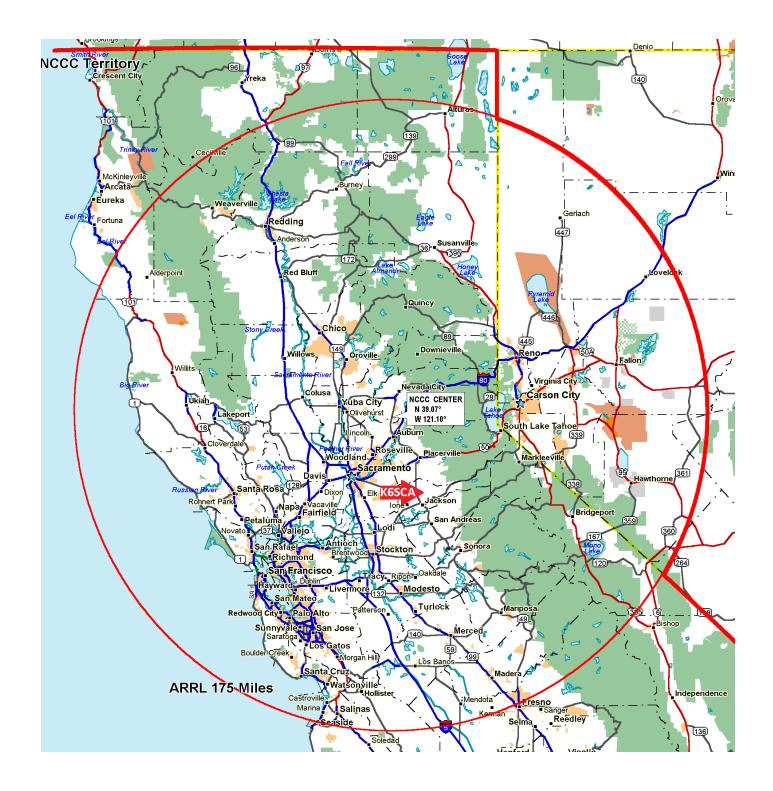
Other Hobbies: Pistol and rifle shooting, NASCAR fan and Giants baseball. Also build and maintain 2 / 440 linked repeater system.











# Pacificon Special Events Station W1AW/6

It was another successful year at the Pacificon Special Events Station. PAARA and partners again sponsored the station, which was in operation from 11:30 AM, Friday, Oct 16, until 12:00 noon, Sunday, Oct 18, 2015; the total operating time was 48 1/2 hours. Although band conditions were not optimal, 2,761 contacts in 102 entities were made.

There was a good turnout of guest operators, all of whom had a great time operating the station. Approximately 25 Boy Scouts visited the station and operated on 20M HF, working towards getting their Radio Merit Badge. Certainly this experience will draw some of them into the amateur radio hobby.

Rick Huisman, N6DQ, and Joanna Dilley, K6YL, again provided a fantastic radio station. Four HF stations and one VHF station were in operation. The triplexer/filter setup drew a great deal of interest and plenty of photographs were taken. There were also many comments on the antenna trailer and hex beam antenna. Bob Heil, K9EID, also supported the station by providing the latest Heil Pro7 headsets and FS-3 Foot Switches.

Thank you to all the operators who spent time working the station. Without you, it would have just been a display of radios. Thank you also to those who helped set up, monitor, and take down the station. It was a big effort that was completed successfully and without any major issues.

We are looking forward to Pacificon 2016 and another successful outing for the Pacificon Special Event Station. Thanks everyone!

Marty, W6NEV Special Event Station Coordinator

# New Lumber !



Big surprise from UPS today, a very nice, large plaque for "High Score - West Mountain" in the MIQP. I have more wall space here, so it will go on the wall.

#### 73, Fred K6DGW

## TUBE OF THE MONTH Visit the museum at N6JV.com Norm N6JV

#### **RK-20**

In late 1925, a small company called the American Appliance Co. began marketing a cold cathode rectifier called the type "B". They also used the brand name "Raytheon" on the tube. Raytheon sounded better than American Appliance, so the next month they changed the company name to Raytheon. During the winter of 1932-33, a group of hams at Raytheon started getting ideas to produce transmitting tubes for the ham market. More interesting and fun than rectifiers.

The technical staff at ARRL headquarters made several suggestions including the need for a tube that would operate at high frequency, require little drive and could be screen modulated. This was the Depression and money was tight. A tube that would put out good power as an amplifier or oscillator would simplify the transmitter circuitry as would screen modulation. Plate modulation was expensive. My father was using link modulation and burning his lips on the hot microphone.

A relatively inexpensive tetrode was developed in 1934 called the RK-20. It was rated at 40 watts dissipation and could be used at full power to 30 MHz. The new tube was a big success and RCA seemed to get jealous. They soon produced a tube that looked like the RK-20 and called it the 804. The 804 never seemed to catch on as it was only good to 15 MHz and everyone wanted to operate on 10 Meters. RCA eventually made the 814 that took market share away from Raytheon especially when the military gave it the VT-154 number. Its handy for RCA when your company's president is an Army general.

Not wanting to miss a chance to capitalize on RCA's marketing, Raytheon started marking some of their RK-20s as 804s. RCA had made their 804 to look like the 20, so they copied the copier. Later Raytheon RK-20As were marked RK-20A/804.



Raytheon tubes were famous for being rugged. Extra supports were built into the element mounting presses. This example is the second variety where the classic wide cap was first incorporated. This variety also had arms with small insulators to the ends that were attached to the plate and limited vibration.



California QSO Party

# GOLDRUSH—TEAM

# K6<u>G</u> - San Bernardino County

# K6NR, K6RBS, AF6GL

The "K6VO" crew has been operating CQP at the K6NR station near Victorville since 2003 or so. We were pleased to be offered the chance to put K6G on the air from San Bernardino County this year. Joining K6NR in operating K6G were Richard, K6RBS, and Tim, AF6GL, with Mike, NM6X providing logistical support. Bands weren't in great shape, with 10 meters only netting 80 contacts.





K6RBS

We had several periods with over 120 QSOs an hour, the usual doldrums during the middle of the night, with all sorts of rates in between. We had a great time.

Richard and Mike also took time out to DF a couple of sources of local QRN; now we just need to go knock on some doors sometime. Thanks to Mike, we ate considerably better than normal!



AF6GL

The K6NR station is a K3 and AL1200 amplifier, with HF monobanders (5L@48' on 10, 5L@45' on 15, 4L@60' on 20), a 40 meter 4 square, a 80m vertical, and a 160m inverted L.

Many thanks to NCCC for running a great event, and giving us the chance to operate as K6G.

Dana, K6NR



**California QSO Party** 

# GOLDRUSH—TEAM

# N6<u>G</u> - Tuolumne County

# W6TCP, KQ6DI, WB6ETY, KI6OY KG6YYY, KK6DF

This was our third year we activated Tuolumne using N6G so we were very pleased to be part of the Goldrush 50th CQP event!

The location we use is a group of cabins was built in the late 1910's as housing for a lumber camp, and they were built as temporary buildings. They now have water and propane, but no electricity. The nearest electricity is one mile away, so there is very little man-made electrical noise its really amazing to hear a the bands with no electrical noise.

Our station is the Elecraft K line up. K3, KPA500, KAT500 and the P3. For 10/15 and 20m we use a HEX beam at 50ft and on 80 and 40 we use a couple of OCF dipoles that undertook a major overhaul this year and preformed exceptionally well.



From Left to Right Arnold KQ6DI, Ian W6TCP, John WB6ETY, Lee KI6OY, Dave KK6DF (Cathi KG6YYY was baking CQP cookies)



The Hexbeam is mounted on a trailer that we take up for the event and when cracked up, is around 55ft. Unfortunately the trees are as high at 200 feet but its seems to work just fine all things considered.

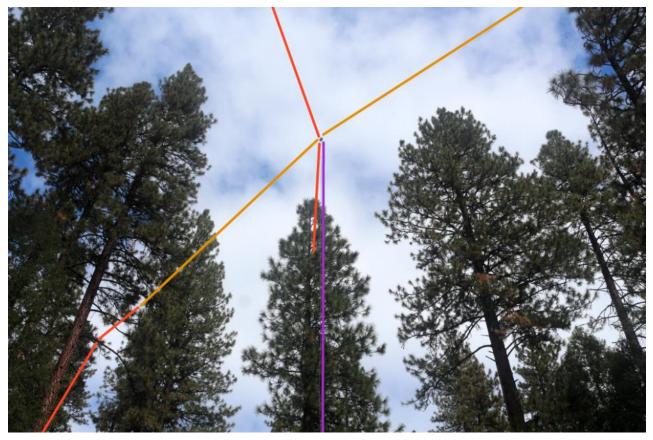
Station line up from Left to Right P3, K3, KPA500 Palstar Auto ATU (backup) KAT500 primary.

W2 power meters X2

Logging s/w N3FJP

We had originally planed to increase the power to 1kw using a H/B amp but what with everything that was going on timing didn't work out... That's now a project for 2016.



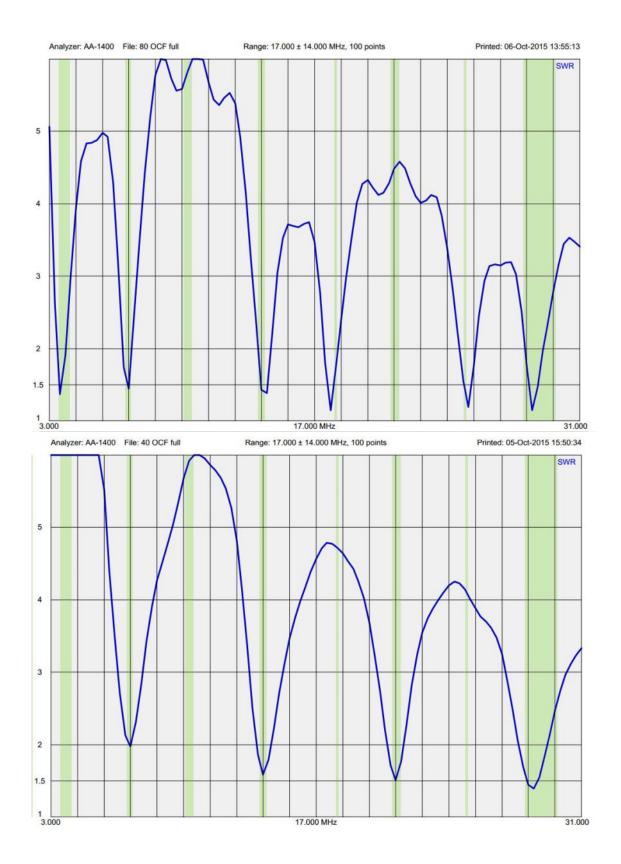


Arnold is (now) a expert with his antenna catapult and managed to get one of the OCF dipoles at 70ft!

Last year our wire OCF dipole fried with just 500 watts so Arnold KQ6DI spent a vast amount of time researching a improved OCF design for use at N6G. All that work paid off and this year we were very pleased with the OCF dipoles performance.

We used 2 Off-Center Fed Dipole (OCFD) antennas for the lower bands and also for higher bands as a back-up and switchable alternate to the HexBeam. The 80m OCFD operates on 80m, 40m, 20m and 10m. It was at a height of 70'. The 80m OCFD has a split of 33.3%-66.7%. The 40m OCFD operates on 40m, 20m, 15m and 10m and was at a height of 35'. The 40m OCFD bas a split of 40.2%-59.8%. Both antennas were approximately parallel in a NNE-SSW orientation (due to convenient trees). Both OCFD antennas used Balun Designs model 4115 4:1 baluns with a Wireman #8232 choking section immediately below the balun.

14% of our total contacts were made on the 80m band and 29% were on the 40m band. or... 42% of our total contacts were made on the 80m and 40m bands. A small number of 20m Qs were made using one of the OCFD antennas on 20m because switching antennas brought the signal strength up much more quickly than rotating the beam. We spent a little more time on 80 & 40 meters to give more California stations a chance to get the 'G' for the Gold Rush Coin.



SWR plots for the new OCF dipoles measured at the radio end of the coax !



Arnold KQ6DI, Dave KK6DF



Lee KI6OY, John WB6ETY

See you all next year 73 de N6G !

# **CQP** Cookies

#### By Cathi KG6YYY and Arnold KQ6DI

Introduction by Ian W6TCP

An important part of any contest is eating Cathi KG6YYY came up with the N6G CQP cookie so we can nibble out way through California while we work the various CA counties. Unfortunately while we didn't work all 58 multipliers we DID manage to eat all the CQP cookies... Nice!



They also make for a tasty treat while studying the rules!

#### Items needed:

Sugar cookie dough Rolling pin Parchment/baking paper (not wax paper) Cookie sheet Wire cooling rack Cookie cutter Extra flour Candy melts Disposable icing bags or freezer zipper bags with tiny cut in bottom corner for piping Start with your favorite sugar cookie recipe or you can use store bought sugar cookie dough that is in the refrigerator section of your grocery store.



Roll out cookie dough on lightly floured surface, (I use parchment paper on my table surface) to approximately 3/16" thickness.



KQ6DI with rolling pin >

Cut into desired shape and arrange on parchment lined cookie sheet. bake according to your recipe's directions.



For these cookies, I used a "California" shaped cookie cutter that I found at my local cake supply shop. you can search and order online as well.



Into the oven they go! (for the time and temperature required by your recipe)



"California" on wire cooling rack.



I use "Candy Melts" for the "icing". you can get Candy melts at any craft store.

They come in a variety of colors and are easy to use.

Melt the candy melts according to the package directions.

If the candy melts seem too thick, you can thin by adding small amounts of vegetable shortening.

In a disposable piping bag (or use a freezer zipper bag with small corner cut), begin by outlining the border of the cookies and let set.



These will last a week in a storage container. (Assuming you don't eat them) ! They are a little labor intensive, but a fun idea for the next Cal QSO or Contesting Event" Note: Support for baking is not supported on the NCCC reflector ! - Ian W6TCP editor ③



# California QSO Party Glenn County

By Dave Sanders, K6KNS

When I heard that no one had registered to cover Glenn County for CQP, I thought I would give it a go. I really enjoy working radio ops outdoors, like Field Day and doing Summits-on-the-Air. Since I would most likely be the only station for Glenn, I figured I would get lots of contacts. Plus my CQP category would be California County Expedition (CCE) instead of my QTH.

I had planned to set up in a spot in the Mendocino National Forest but gas generators were not allowed due to fire restrictions. I ended up getting permission from a farmer just inside Glenn County. I arrived an hour before CQP and set up my station. I used a Yaesu FT-991 at 100w. My antenna was a Super Antennas YP3 3-element portable Yagi set up for 20 meters phone. I borrowed an easy-up mast which put the YP3 at 24 feet. I used N3JFP logging software on my laptop and wore my new RadioSport headphone set which was very comfortable.



I few minutes before the official start, I rag-chewed with a NY station (58 both ways) to claim a frequency. Once the contest began, I logged many contacts but it wasn't long before high powered stations below and above my frequency made it tough to make exchanges. I changed frequencies several times and made 187 contacts before I was forced to leave. A tractor in a nearby began plowing a dry field and I was inundated with dust. My run time was 5 hours.

On Sunday, I set up my station in my driveway (following CCE rules) and ran as Sacramento County making 50 contacts. Between the solar storm and cleaning dust off my equipment I wasn't consistently running. Although my station worked perfectly in Glenn, I think more TX power would have helped. And a location at a higher elevation would have been much better.



I want to thank everyone who gave me tips and advice, as well as the use of the mast. I enjoyed CQP even though I didn't reach my goal of 500 contacts but all logs count. I had a lot of fun and learned a lot. 73's...Dave K6KNS

# California Contest Editorial for November 2015 by Chris N6WM

#### Greetings KBers.

At the beginning of the current administration, I talked about sending more detailed editorial commentary about upcoming contests on the email reflector. In an effort to improve consistency, we have decided to transition this write up to the Jug on a monthly basis. I hope you enjoy my editorial perspective on some of these contests trying to keep things fun and entertaining. This editorial content does not reflect any official opinion of the NCCC Administration or Management. Base information on contests is taken from the WA7BNM contest calendar. Contests listed are chosen with a Northern California focus.

## Upcoming contest Editorial for the Month of November 2015

## ARRL Sweepstakes Contest, CW: 2100Z, Nov 7 to 0300Z, Nov 9

#### http://www.arrl.org/sweepstakes

Yes. With CQP behind us, its once again time to ring in the full bore contest season with the Sweepstakes. Its been many years past since the NCCC has been victorious. Why? Your guess is as good as mine.. Maybe HMO exhaustion? BIC exhaustion? Brain exhaustion? Thoughts it can't be won? Exchange is too long? Not enough ops?

Oh for goodness sakes people could I possibly ask.. or beg you to put the SS lethargy behind us OK? In the ever endearing deep voice of my elmer Ken N6RO "Of course we will be QRV It's a contest!" And a fun one at that, taking skill, discipline and fun to the highest level.

Last year a loosely affiliated small club in the bay area, PL-259 embraced what was fun about Sweepstakes, Did some research and got the correct OPS on the air and surprised the Nation by winning the Small Club Sweepstakes GAVEL!\*

This is awesome outside the box thinking. I hear rumors others have taken notice and may be attempting similar efforts. Let's get on the air, have fun, and good luck in the contest!

\*Note for full disclosure, the author N6WM was QRV as part of team K6LRG in SS 2014 and those logs were submitted as part of the PL-259 winning effort.

## WAE DX Contest, RTTY 0000Z, Nov 14 to 2359Z, Nov 15, 2015

#### http://www.darc.de/referate/dx/contest/waedc/en/rules/

Ah Working all Europe. In RTTY. Everybody wants too, but alas here we are in Northern California. Can we win from here? Do we try? I am sure our east coast brothers and sisters in the contest world will root us along since they are so much closer to Europe and they want to see how well we can do from here? Ummm.. No. I don't think so. If you are a RTTY junkie or if you just want to have some RTTY fun, this one could be for you.

So to recap, from the rules regarding the Mults for WAE:

"For non-European stations the multiplier is the number of countries defined in the WAE Country List worked per band."

Diddlers.. Good luck in the contest. But if you want to WIN something with a CLEAR ADVANTAGE from the west coast this weekend then look no further than.....

## JIDX Phone Contest 0700Z, Nov 14 to 1300Z, Nov 15, 2015

http://www.jidx.org/jidxrule-e.html

Now this is a fun contest for the NCCC circle of operators. With SOAB, M/S and Single band entries in the low and high power categories, combined with our west coast location, WORLD WIDE DOMINANCE can be achieved from Northern CA. I write this as I look on my wall with 15 and 20 Meter band North American WIN plaques from 2009 and 2010 respectively (very nice I may add). This is always a favored contest at Radio Oakley. I am not sure why the NCCC doesn't rally an effort focused on JIDX. Stop. Let me repeat. I am not sure why the NCCC doesn't rally an effort focused JIDX. Over? We have the east coast by the \*\*\*\*\* on this one.. very fun. Very easy exchange. Single band efforts can be done with reasonable time budget. More BIC could get you a continental win. Need I say more?

## ARRL Sweepstakes Contest, SSB 0000Z-0200Z, Nov 25

#### http://www.arrl.org/sweepstakes

You did great in CW, then you had a great time winning North America in JIDX Phone, and now you are going to seal the deal by finishing up your Gavel winning effort in SS SSB. This one should be sponsored by Cloraseptic Throat spray and Sucrets lozenges, because you have so much fun verbalizing the exchange rather than using the DVR that you lose your voice. And it is a cool exchange, in fact listening to this contest on the air one day led to my taking up HAM contesting as a my focus. Very exciting. Very fun. Good luck. And since you lost your voice, there is this the following week..

## CQ Worldwide DX Contest, CW 0000Z, Nov 28 to 2400Z, Nov 29

#### http://www.cqww.com/rules.htm

Oooh ya. Now this is a fun contest. Save up some cash and set up on a tropical paradise for a win and Mai Tai's after.. Join your local Multi-Multi.. Join and International Multi-Multi.. It's CW! It's fun! It's everywhere! It's an easy exchange! You can get a multi- band DXCC in a couple of days! Seriously. Contest and bag a couple of ATNO at the same time!

This is truly one of my all-time favorite contests. Test your CW speed and copy stamina, Test your propagation knowledge and path skills.. Test your SO2R setup. It's all here for the taking. With low, high and multiple time commitment categories available, you really should be QRV in this contest.

Good luck working the world. Hope 10 meters holds up.

73 and seeya next time!

Chris

N6WM

# Joint NCCC, MLDXCC & REDXA Meeting

Guests are always welcome - Please join us.

## Saturday 31st October

#### Location:-

Rockville Corners 4163 Suisun Valley Road Fairfield, CA 94534 (707) 864-4325 www.salvioattherock.com

11:00 am Socializing11:30 am First Speaker12:00 pm Buffet Lunch12:30 pm Contest Strategy12:45 pm Second Speaker



#### Program:

Stu K6TU - "Introducing a New Remote Contest Station"

#### &

Paul N6PSE - "DXpedition to Eritrea E30FB" with an update on the upcoming "VP8STI/VP8SGI DXpedition"

#### **RSVP & PAYMENT:**

We'll be collecting money for this event and RSVP's are helpful. The price of \$20 includes a buffet of pastas, salad, bread rolls, iced tea, coffee, tax and tip. Guests are welcome to join us. Payment can be via the club's PayPal account (paypal@nccc.cc) or at the door. Send your RSVP's to Secretary.NCCC@gmail.com

# N6XI Sierra Chapter BBQ



Top - K2RD, K6DGW, KU7Y, K9JM, K5RC

Bottom - K6NV, K6RD, N6XI



BBQ Cont.



N6DQ, K6YL, W1RH



## "Ride Ride Ride the MUF" by Ed Radlo AJ6V

It's been 22 years since I last plagiarized Jan & Dean, so I figure I'm due. I'm referring to my song "Dupe City", a parody of "Surf City", which was published in the National Contest Journal in 1993 and appears on page 103 of the NCCC Sweepstakes Handbook (posted on our NCCC Website). This time, I was inspired by the surfing duo's "Ride the Wild Surf". If you want to see the real lyrics to that surfing classic, a quick Web search will do.

Out here on the crazy whacked-out Left Coast, a favorite contesting technique is to operate on the highest open band, and then to sequentially drop down in MHz as the sun descends into its evening resting place. This technique might get you fewer Q's than if you operate on the most populated band, but it's easier on the nerves, and will probably get you more mults. As everyone knows, we call this technique "riding the MUF".

So without further ado, here is my tribute to this venerable operating technique:

In Nevada there's a place known as 7RN Where the best contesters in the world come to play And ride the MUF they come to try To conquer those waves some 30 Megs high.

Ride ride ride the MUF Ride ride ride the MUF Ride ride ride the MUF Gotta make that one last Q!

DXing fever brings them for the 'test Hangin' round the rig you'll meet the best They're wired and they're ready just waiting for The waves to build, that's what ions are for.

Ride ride ride the MUF Ride ride ride the MUF Ride ride ride the MUF Gotta make that one last Q!

Lined up and waiting for that next big run Nothing can stop it 'cause you've just gotta ride ride ride ride Big guns on the high bands, well, they're OK But they don't dig the static down on 160 Way It takes a lot of skill and courage unknown To catch the last wave and ride it in alone.

Ride ride ride the MUF Ride ride ride the MUF Ride ride ride the MUF Gotta make that one last Gotta make that one last Q!

Ride ride ride the MUF Ride ride ride the MUF Ride ride ride the MUF Gotta make that one last Q! Waooooo, waooooo, waooooo!

#### 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.



# Contest Calendar– November page 1

High Speed Club CW Contest	0900Z-1100Z, Nov 1 and
	1500Z-1700Z, Nov 1
ARS Spartan Sprint	0100Z-0300Z, Nov 3
QRP Fox Hunt	0100Z-0230Z, Nov 4
Phone Fray	0230Z-0300Z, Nov 4
CWops Mini-CWT Test	1300Z-1400Z, Nov 4 and
	1900Z-2000Z, Nov 4 and
	0300Z-0400Z, Nov 5
UKEICC 80m Contest	2000Z-2100Z, Nov 4
NRAU 10m Activity Contest	1800Z-1900Z, Nov 5 (CW) and
	1900Z-2000Z, Nov 5 (SSB) and
	2000Z-2100Z, Nov 5 (FM) and
	2100Z-2200Z, Nov 5 (Dig)
QRP Fox Hunt	0100Z-0230Z, Nov 6
NCCC RTTY Sprint	0145Z-0215Z, Nov 6
NCCC Sprint	0230Z-0300Z, Nov 6
IPARC Contest, CW	0600Z-1000Z, Nov 7 and
	1400Z-1800Z, Nov 7
SKCC Weekend Sprintathon	1200Z, Nov 7 to 2400Z, Nov 8
Ukrainian DX Contest	1200Z, Nov 7 to 1200Z, Nov 8
NA Collegiate ARC Championship, CW	2100Z, Nov 7 to 0300Z, Nov 9
ARRL Sweepstakes Contest, CW	2100Z, Nov 7 to 0300Z, Nov 9



# Contest Calendar– November page 2

IPARC Contest, SSB	0600Z-1000Z, Nov 8 and
	1400Z-1800Z, Nov 8
EANET Sprint	0800Z-1200Z, Nov 8
DARC 10-Meter Digital Contest	1100Z-1700Z, Nov 8
QRP Fox Hunt	0100Z-0230Z, Nov 11
Phone Fray	0230Z-0300Z, Nov 11
CWops Mini-CWT Test	1300Z-1400Z, Nov 11 and
	1900Z-2000Z, Nov 11 and
	0300Z-0400Z, Nov 12
RSGB 80m Club Sprint, SSB	2000Z-2100Z, Nov 11
NCCC RTTY Sprint	0145Z-0215Z, Nov 13
QRP Fox Hunt	0200Z-0330Z, Nov 13
NCCC Sprint	0230Z-0300Z, Nov 13
WAE DX Contest, RTTY	0000Z, Nov 14 to 2359Z, Nov 15
10-10 Int. Fall Contest, Digital	0001Z, Nov 14 to 2359Z, Nov 15
JIDX Phone Contest	0700Z, Nov 14 to 1300Z, Nov 15
OK/OM DX Contest, CW	1200Z, Nov 14 to 1200Z, Nov 15
Kentucky QSO Party	1400Z, Nov 14 to 0200Z, Nov 15
CQ-WE Contest	1900Z-2300Z, Nov 14 (CW/Digital) and
	0100Z-0500Z, Nov 15 (Phone) and
	1900Z-2300Z, Nov 15 (Phone) and
	0100Z-0500Z, Nov 16 (CW/Digital)



# Contest Calendar– November Page 3

Homebrew and Oldtime Equipment Party 1300-1500Z, Nov 15 (40m) and 1500-1700Z, Nov 15 (80m) Run for the Bacon QRP Contest 0200Z-0400Z, Nov 16 **QRP Fox Hunt** 0100Z-0230Z, Nov 18 **Phone Fray** 0230Z-0300Z, Nov 18 **CWops Mini-CWT Test** 1300Z-1400Z, Nov 18 and 1900Z-2000Z, Nov 18 and 0300Z-0400Z, Nov 19 NAQCC CW Sprint 0130Z-0330Z, Nov 19 0145Z-0215Z, Nov 20 NCCC RTTY Sprint **QRP Fox Hunt** 0200Z-0330Z, Nov 20 NCCC Sprint 0230Z-0300Z, Nov 20 **YO International PSK31 Contest** 1600Z-2200Z, Nov 20 SARL Field Day Contest 1000Z, Nov 21 to 1000Z, Nov 22 LZ DX Contest 1200Z, Nov 21 to 1200Z, Nov 22 All Austrian 160-Meter Contest 1600Z, Nov 21 to 0700Z, Nov 22 Feld Hell Sprint 1700Z-1859Z, Nov 21 NA Collegiate ARC Championship, SSB 2100Z, Nov 21 to 0300Z, Nov 23 RSGB 2nd 1.8 MHz Contest, CW 2100Z, Nov 21 to 0100Z, Nov 22 ARRL Sweepstakes Contest, SSB 2100Z, Nov 21 to 0300Z, Nov 23 0000Z-0200Z, Nov 25 SKCC Sprint 0230Z-0300Z, Nov 25 Phone Fray **CWops Mini-CWT Test** 1300Z-1400Z, Nov 25 and 1900Z-2000Z, Nov 25 and 0300Z-0400Z, Nov 26 **UKEICC 80m Contest** 2000Z-2100Z, Nov 25 + RSGB 80m Club Sprint, CW 2000Z-2100Z, Nov 26 NCCC RTTY Sprint 0145Z-0215Z, Nov 27 NCCC Sprint 0230Z-0300Z, Nov 27 **ARRL EME Contest** 0000Z, Nov 28 to 2359Z, Nov 29 CQ Worldwide DX Contest, CW 0000Z, Nov 28 to 2400Z, Nov 29



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. 100W HF/6m Transceiver, gen cov. receiver . Dual DSP 32 bit . Three roofing filters- 3, 6, 15khz • 5.8 in WQVGA TFT display • Hi-res real time spectrum scope



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#### ID-5100A | VHF/UHF Dual Band Digital Transceiver

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• 5/2.5/1.0/0.5/0.1W Output • RX: 0.52-1.71.88-174. 380-479 MHz\*\* • AM/FM/FM-N/WFM/DV • 1304 Alphanumeric Memory Chls • Integrated GPS • D-STAR Repeater Directory • IPX7 Submersible



# **KENWOOD**



#### TS-590SG | HF/50MHz Transceiver

· Equipped with 500 Hz/2.7 kHz roofing filter as standard · ALC derived from TS-990S eliminating spike issues . Antenna output function (shared with DRV connector) • CW - morse code decoder function



#### TM-D710G | 2M/440 Dualband

 V+V/V+U/U+U operation • Built-in GPS • Built-in TNC for APRS & DX-Cluster operation • 50W 2M & UHF • 1,000 memories • Dual receive • Green or amber backlight colors • Latest APRS firmware w/new features . Sky Command II remote functions



#### TM-V71A | 2M/440 DualBand

· High RF output (50W) · Multiple Scan · Dual receive on same band (VxV, UxU) · Echolink® memory (auto dialer) · Echolink® Sysop mode for node terminal ops • Invertible front panel • Choice of green/amber for LCD panel • 104 code digital code squelch



#### TM-281A | 2 Mtr Mobile

. 65 Watt . 200 Memories . CTCSS/DCS . Mil-Std specs . Hi-quality audio

#### TH-F6A | 2M/220/440

• Dual channel receive • .1 - 1300 MHz (cell blocked) RX • FM, AM, SSB • 5W 2M/220/440 TX, FM • 435 Memories • Li-Ion Battery







#### FT-991 | HF/50MHz/2M/440 Transceiver

• 160 M-440MHz - SSB/CW/FM/C4FM Digital/AM/RTTY/PSK • 100 W (2M/4440: 50 Watts) • 3.5" TFT full-color touch panel operation • High speed spectrum scope • Roofing filers: 3kHz & 15kHz • 32-bit high speed floating point IF DSP



#### FTDX1200 | 100W HF + 6M Transceiver

 Triple Conversion Receiver With 32-bit Floating Point DSP • 40 MHz 1st IF with selectable 3 kHz, 6kHz & 15 kHz Roofing Filters Optional FFT-1 Supports AF-FFT Scope, RTTY/PSK31 Encode/ Decode, CW Decode/Auto Zero-In • Full Color 4.3" TFT Display



#### FT-450D | A100W HF + 6M Transceiver

• 100W HF/6M • Auto tuner built-in • DSP built-in • 500 memories • DNR, IF Notch, IF Shift



#### FTM-400DR | 2M/440 Mobile

 Color display-green, blue, orange, purple, gray • GPS/APRS • Packet 1200/9600 bd ready • Spectrum scope • Bluetooth • MicroSD slot • 500 memory per band

#### FT-60R | 2M/440 5W HT

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