



#620 – March 2024



JUG

Publication of the Northern California Contest Club

NCCC

NCCC – 53 years of contesting excellence

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

Next ZOOM Meeting

Tue 12 Mar 2024 1800 PST

**“John, NN6U: “San Francisco
Radio Club Outdoor Activities”**

President's Report

David West, KO6M



I'll be honest, I didn't do as much contesting in February. That didn't mean I didn't have it on the mind though. It also didn't mean I wasn't out there promoting contests to others or helping others build up their stations.

For instance, one of our members, W6JFA, received a new radio a few months ago but he hadn't prepped it for Digital use. Over the course of a few nights, we got it all working and away he went. I say over the course of a few nights because in typical fashion we didn't read the manual. So, we had some trial-and-error time but now he is ready and rearing to go for the next ARRL Digi Contest

On another occasion I was engaged in discussions about contesting basics and now I'm in the middle of putting a presentation together for the common non contesting operator about contesting. Perhaps I'll inspire a budding ham to become a contester and that ham will become the next rookie of the year.

There was a weekend spent working with 3d printed parts for an antenna that I hope to take with us on CQP adventures. How this plays into contesting is a stretch but without an antenna it's just talking to yourself. Of course, I can't forget the time spent working on the Awards Banquet.



Thanks to Greg, KK6PXT, we have a date and a venue. Mark your calendars for April 20th at Cattleman's in Livermore. We will be sending out the official invite in the coming days.

However, let's be honest. This isn't about me. This is about you all. That's what the Northern California Contest Club is really about. The Board just went through the awards for this year and we definitely saw a handful of leaders in points and contest participation. We also had a wonderful list of up and comers. It takes all of us to be the club and to grow. We see you out there: Thank you.

Lastly, elections are coming up in April. If you would like to help lead then let us know. Maybe you don't want to be on the board, perhaps a committee or a single volunteer position is more your style. We have those roles available too.

Upcoming Events

South America 10 Meter Contest	1200Z, Mar 9 to 1200Z, Mar 10
Stew Perry Topband Challenge	1500Z, Mar 9 to 1500Z, Mar 10
North American Sprint, RTTY	0000Z-0359Z, Mar 10
Maidenhead Mayhem Sprint	0000Z, Mar 23 to 2359Z, Mar 24
North American SSB Sprint Contest	0000Z-0400Z, Mar 24
CQ WW WPX Contest, SSB	0000Z, Mar 30 to 2359Z, Mar 31
Various State QSO Parties	<i>Don't forget the State QSO Party Challenge</i>

Of course, we also have the International DX Convention, April 12-14th. Hopefully you can make that. I know there are some great presentations being put together for that. More info at www.dxconvention.org/index.html

73 and KB,
David, KO6M

AD6E Re-elected Pacific Section Manager ARRL via Tom, K5RC

“In the ARRL Pacific Section, Alan Maenchen, AD6E, was re-elected in a close race by receiving 113 votes. Kevin Bogan, AH6QO, of Honolulu, received 100 votes. Maenchen, of Wailuku, Hawaii, was appointed as Section Manager of the Pacific Section on November 1, 2023, to fulfill the term of office after Joe Speroni, AH0A, stepped down.”



About NCCC

Officers and Directors, 2023-2024 Contest Season

President: David West, [KO6M](#)
Vice-President/Contest Chairman: Chris Tate, [N6WM](#)
Secretary: Greg Alameda, [KK6PXT](#)
Treasurer: Nian Li, [WU6P](#)
Past President: David Jaffe, [WD6T](#)
Director: Bob Cox, [K3EST](#)
Director: John Miller, [K6MM](#)
Director: Ed Radlo, [AJ6V](#)

Volunteers

Charter Member: Rusty Epps, [W6OAT](#)
Awards Chair: Gary Johnson, [NA6O](#)
California QSO Party Chair: Dean Wood, [N6DE](#)
QSL Mgr [[K6ZM](#)]: vacant
QSL Mgr [[K6CQP/N6CQP/W6CQP](#)]: Dean Wood, [N6DE](#)
NAQP Teams: **OPEN**
NA CW Sprint Teams: Bob Vallio, [W6RGG](#)
NCCC Email Reflector Admin: Phil Verinsky, [W6PK](#)
Worked All CA Counties Award: Fred Jensen, [K6DGW](#)

NCCC Thursday Night Contesting

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

Communications

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

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the last couple of decades. The last cycle was a bit lackluster. We were able to soundly break a station record in ARRL DX that was set.. yes you guessed it.. exactly 22 years ago.

This weekend I had the opportunity to work a SOSB 15 meter effort from K6LRG. I had commitments over the weekend and was unable to operate the entire time, but I was able to work over 1100 qsos in 15 hours of op time. Again prolonged runs into Europe on Saturday morning.. culminating to having stations from 4X, HZ and UN8 answer my cqs from north W6. AMAZING.

So.. we have a few contests still to come this amazing season propagation wise. A couple of them are very important contests for us in the West. The 2024 WPX club contest is rapidly approaching. There are 2 contests in the series. First is the WPX SSB contest late this month (3/30-3/31). Regardless of your skill level, I strongly recommend that you make some plans to be on the air to support the NCCC in this contest. Secondly, the band

VP/CC Report

Chris Tate, N6WM

The sun is saying, "NOW IS THE TIME!"



N6WM, in the ARRL DX CW at N6RO

Greetings my fellow contesters. I wanted to share some thoughts coming off of 2 contests that represented stellar band/solar conditions as we teeter on the peak of the current solar cycle.

Operators around the globe touted the fantastic conditions of the ARRL DX CW contest, and out here on the West Coast, having the prolonged openings to Europe and Asia, with upper bands springing to life hours before sunrise and lasting hours after sunset provide hours more contesting fun than we have become accustomed to over



conditions, should they remain good, are some of the best one can experience in an 11 year cycle. More reason to get on the air and K some B. this concludes the big Phone events for the 2023-24 contest season.

A couple weeks after the first WPX, we have the popular (to us in the west) JIDX CW contest (4/13-4/14). Its been my observation as a 15m band captain at N6RO, and overall 15m enthusiast, that the improved solar conditions open up (among other things) access to many Asia stations, primarily in Japan, who are licensees that can only operate between 0-50 watts (yes I have been called by 400 milliwatters) that quite frankly with lesser conditions are hard or sometimes impossible to hear. I expect if good conditions prevail, that this will be a very fun contest and worth your time to operate with plenty of stations to work. There are records there that are begging to be broken.. will you be the one to do it?

Finally we have the last of the big contests of the season. Late in spring, the CW operators hit the airwaves again, this time for the WPX CW contest. Again, these WPX contests should ALWAYS be focus contests here in NCCC land.. flog or not. And given recent conditions, I suspect you will regret not seizing these contest opportunities to (A) help support your club and team and (B) enjoy the playing field on a solar peak and (C) to KB cw style with amazing runs and zillions of prefixes all over the world.

So its my hope and recommendation you all plan your schedules to be qrv in all 3 of these contests, and in particular both WPX contests that have standing focus contest status.

I also want to remind you that the upcoming International DX/Contest Convention in Visalia is approaching.. and we are hosting Contest academy. I am still on the search for more faculty to Join us to help share your skills and knowledge to improve the next generation of contest greats. Please contact me directly if your willing to participate as staff/faculty at Contest Academy 2024.

That's all I have for this month.. best of luck to all in WPX SSB at the end of the month.. hoping to hear many many Kbers out there with oddball calls or not.. and of course enjoy your solar peak.

73 es KB
Chris N6WM, VP/CC

KB Competition Status

Gary, NA6O, KB Awards Guy

Many of you already know that the Annual KB Competition automatic updates stopped on January 1 due to a change in the way data is made available to us by 3830. The code that acquires that data needs a revision. Unfortunately, our master programmer Matt WX5S has been ill and unable to attend to the task. He plans to get back to it as soon as he's well. Then the results for this past contest years (which closed March 1) will be announced along with the winners, and plaques and certificates will be distributed as usual. That may or may not occur at the April awards meeting; we'll see...

The new running of the competition is underway but without realtime standings of course. I'm not proposing any significant changes in the rules but Matt and I will have to review the new data interface to be sure that all the info we need is available. So just assume for now that the contest list etc is nominally the same. Rules and standings are always at: <https://nccc.cc/awards.html>



The Great KPH Crypto Tests

JUG Editorial Staff

(While in the USAF as a communications officer in the 60's, I was surrounded by cryptography and developed an interest in it. There being a whole lot of blank pages in the March JUG, the Great KPH Crypto Tests seemed like good source for ink on the page)

The Amateur radio hobby offers a wide variety of ways to enjoy it. The [Marine Historical Radio Society](#) which has preserved and operates the former coastal marine station KPH in Point Reyes, added another when it began an occasional cryptographic test. KPH is typically operated on Saturdays by volunteers, transmitting press, Pacific weather, and occasionally handling traffic for several museum ships --The Red Oak Victory [Richmond] and Jeremiah O'Brien [San Francisco] are two regulars. KPH employs original equipment from both KPH and KFS and antennas at both the Point Reyes receiving and Bolinas transmitting site.

A year or so ago, Kevin McGrath, whose hobby interest is cryptography and the various historical cryptosystems, joined KPH to conduct a cryptographic test. The first two tests went back to WW2 and employed the German Enigma cryptographic machine.

Enigma

The German Enigma machines from WW2 were electromechanical encryption/decryption devices and used a set of 3 disk-like rotors cascaded in series to achieve the encryption. Many Enigma machines still exist and emulations of them have been created and posted to the WWW. Enigma cryptography is symmetric meaning the key that encrypts will also decrypt back to plain text. The rotors have sets of 26 contacts [for A-Z] on each side, arranged in a circle around the edges, and they are internally wired from one side to the other in various patterns such that the "A-contact" on one side might be connected to the "Q-contact" on the other side. The Army machine used in the KPH test included 5 rotors with different interconnections, of which 3 were selected by the operator for a message. That 3 of 5 selection is part of the cryptographic key.



Plain text letters are entered on typewriter-like keys, one letter at a time. This sends current into the right-hand rotor and it is passed to the next rotor to the left through the rotor's internal wiring, becoming some other letter. When the current exits the 3rd rotor, it meets a "reflector" which sends it back through the rotors where it gets scrambled three more times. The exiting current then illuminates a lamp to identify the cipher letter which the operator writes down. All this scrambling creates a substitution cipher which transforms the plaintext into what looks like garbage but is not terribly hard to break. But, there's more.

Releasing the key causes the right-hand rotor to step forward one contact, changing the current path, and thus the substitution cipher for the next letter. When 26 letters have been keyed, the right rotor is back to its original position and it steps the next rotor one position. When that rotor has stepped 26 times, the 3rd rotor steps one position. Thus, while each letter is encrypted with a simple substitution cipher, that cipher changes with each letter and the resulting ciphertext becomes very much harder to crack. For decryption, the operator sets up the machine using the same key elements and types in the ciphertext letters which illuminates each proper plaintext letter's lamp, letter by letter.



The Enigma Key

The cryptographic key for Enigma is broken into several parts and all but one part were published on paper and had to be kept secret. The “Daily Key” included the specific rotor selection from the five that came with the machine and the order in which they were inserted into the machine. The three rotors can each be set to one of 26 starting positions also specified in that daily Daily Key sheet. When encrypting a message, the operator set the rotors to the daily starting position, selected 3 letters at random ... the “Message Key ... and encrypted it twice yielding two 3-character trigrams. These two trigrams became part of the message header in the ciphertext. The sending operator then reset the rotors to his randomly selected 3 character message key, and encrypted the message for transmission.

The receiving operator set up his machine with the Daily Key, positioning the rotors to the daily starting position and decrypted the two trigrams from the header yielding the sending operator's randomly selected Message Key. He then reset his rotors to that message key and decrypted the message, letter by letter. Since only the 26 letters can be encrypted, numbers in the plaintext were spelled out, “X” was typically used for a period, and the operator had to manually insert spaces into the decrypted plaintext.

Later versions of the Enigma added a plugboard that allowed the operator to route some letters to other letters. The plugboard connections were part of the Daily Key. While that additional scrambling complicated breaking the Enigma code some, it's effect was somewhat limited since it was static through all the messages for that day.

The KPH Test

For the KPH Test, Kevin supplied a real WW2 daily key sheet from October 1944 and instructions on which Enigma model to use in a post to the MHRs website.

The columns of the sheet indicate day number, rotors to use and their position in the machine, the plugboard connections, and the daily message key.

An actual German message from a field commander to headquarters was translated into English and encrypted using a 3-rotor Enigma machine.

Gebirgs Kommandobatalion		Armee-Stabs-Maschinenschlüssel Nr. 28												Nr. 00008					
Stabs im Hauptquartier		für Oktober 1944																	
Tag	Wahltag	Einzelstellung	Steckerverbindungen												Kluggruppen				
01	IV	I	21	15	16	KL	IT	FG	HT	IC	NP	VI	JB	SB	00	lhm	oel	uel	gip
02	IV	II	26	14	11	EN	TO	QB	JER	DK	XU	GP	FV	SJ	LM	ino	oel	nom	lax
03	IV	III	19	09	24	RU	HL	CQ	WM	GA	PI	ES	TR	DF	YL	uol	oel	yhp	oip
04	IV	III	03	04	22	YF	BL	CV	SN	OD	TR	IT	HW	SA	FQ	zqj	htg	xyj	oht
05	IV	V	20	06	15	KL	GJ	EP	AC	TR	HL	HW	QS	DV	OE	lvo	oat	oel	lve
06	IV	I	10	17	01	IV	ST	OE	NO	FI	AK	LD	NP	WE	SO	jhx	ooh	oiv	oew
07	IV	II	13	04	17	QR	GB	HA	NM	VS	WD	II	OP	IK	PE	lva	oio	oed	oig
08	IV	III	09	20	18	RS	NC	WE	GO	TQ	AX	PH	VJ	IL	FF	oif	oow	ooh	oew
09	IV	III	11	21	08	ET	DT	EP	MG	ET	HM	WJ	IL	IV	JA	lad	oow	oer	oek
10	IV	II	01	28	02	EE	SB	OP	RA	SB	VU	UT	KW	LR	YI	oiv	oek	oio	
11	IV	I	06	22	03	GH	JR	TQ	KP	NS	IL	WM	SD	EO	EC	oia	oiv	jij	oht
12	IV	I	12	26	08	TP	BQ	IV	LD	PI	NL	WI	SJ	WE	GB	xil	oos	ooh	oht
13	IV	III	07	05	20	ES	SO	AC	DS	KP	VO	QH	HW	EL	NR	oij	oos	jfa	oos
14	IV	III	19	14	22	HQ	DM	RL	DM	ET	AO	FS	RS	IN	ED	oed	lmp	oow	oht
15	IV	I	15	08	21	ME	IX	HP	WT	ED	TR	FJ	AO	IL	KQ	lax	oio	ooh	jvb
16	I	III	07	11	15	WE	AB	MO	FP	RA	SO	QU	VJ	IN	EL	oio	oow	oht	oio
17	III	II	06	16	02	OT	TC	DJ	LA	RE	PS	IS	WR	HO	IV	hbe	oow	oht	oio
18	I	I	23	08	24	AZ	CJ	WP	DT	SO	QV	MI	NE	TP	OE	oia	oio	oht	oio
19	IV	II	03	25	10	CE	KM	JK	DQ	TU	TL	HS	MP	SP	WB	zfo	oht	oow	oio
20	I	III	20	01	19	QB	YE	WN	AI	OJ	TO	HN	PE	PS	CM	oio	oht	oht	oio
21	V	I	17	13	04	SV	GO	FA	EB	PH	EL	TR	WT	DS	SJ	oio	oht	oht	oio
22	I	V	26	07	16	SW	AQ	NP	FO	UT	UX	ME	CL	BY	LJ	oio	oht	oht	oio
23	I	III	17	00	18	SH	IS	OK	RE	SP	DA	LD	OQ	JM	IV	oio	oht	oht	oio
24	I	II	20	11	29	QT	OO	ST	HA	CB	WD	KL	JS	VK	LU	oio	oht	oht	oio
25	I	III	06	12	03	BQ	FS	TR	JE	VK	PI	OQ	QA	OD	WH	oio	oht	oht	oio
26	I	IV	24	10	07	ER	HQ	HT	WE	VC	OT	OP	LP	SK	AK	hio	oio	oht	oio
27	I	III	05	22	14	ME	GO	SQ	KT	OW	EA	SL	SV	PJ	EN	oio	oht	oht	oio
28	I	IV	15	02	21	KD	FO	CO	FW	HP	KY	HT	QL	VS	OZ	oio	oht	oht	oio
29	I	III	03	23	04	DT	CP	WH	OV	QH	EL	RA	TJ	SL	SN	hij	oht	oht	oio
30	I	III	18	18	05	DV	VJ	FL	ER	TU	HX	AQ	OT	TO	FC	oio	oht	oht	oio
31	I	IV	00	17	20	AC	LS	BQ	WN	UT	OV	FJ	FE	TR	OE	oio	oht	oht	oio

KPH transmitted the message twice at 15 WPM at 2200 UTC during their regular Saturday operations. The enciphered message was:

HQTRS FR OCS 1914Z 100 BRV LTV
 VCXTY JRVHA NNKMO FGKIG OHGLM KVHVZ WDMIP XWRBX JKDWT KGZZA
 IWJVK QUJF. HPPWG KEDDQ QFEMT UKMQU IDIGF YUAJB RPPWS IBJCV

The header indicates “To Headquarters from OCS [the time] [the letter count]” and the encrypted Message Key



twice. With my rotors set to the Daily Key start position, I decrypted BRV LTV to get the randomly selected 3-character message key chosen by the sending operator, reset my rotor starting positions to that message key, and decrypted the message. It turned out to read:

HQTRS FR OCS 1914Z 100 BRV LTV
MY RIGHT IS HARD PRESSED X MY CENTER IS YIELDING X IMPOSSIBLE TO MANEUVER X
SITUATION EXCELLENT X I AM ATTACKING X WI

Apparently, this was some sort of boast in the style of John Paul Jones, who in 1779 said, when asked to surrender, “I have not yet begun to fight”. For correctly decrypting the message, I received a certificate.

Several months later, KPH transmitted another test message using the same Enigma model but with a new WW2 Daily Key and Message Key:

DONITZ FR LOOKS 2013Z OKTOBER 7 100 DBK WSE
EVJMZ VISFP CVCBJ SNQDF CVNPL CNFFO EVSLH YOSKU EUWPB QLRGR
XRGDW OFQCQ KZRJT AUOLG DVSGM GJFRR OZLRC ANKRI NNTCG WVLRC

This decrypted to:

DONITZ FR LOOKS 2013Z OKTOBER 7 100 DBK WSE
FORCED TO SUBMERGE DURING ATTACK X DEPTH CHARGES X LAST ENEMY POSITION GRID
AJ NINE EIGHT SIX THREE X I AM FOLLOWING

Decrypting the DBK WSE in the header yielded the message key “NIY” that had been randomly selected by the sending operator. I reset my rotors to “NIY” and then decrypted the message. This was apparently a message sent to Donitz [who I vaguely recall was a German Kriegsmarine Admiral?] from “Looks,” likely a U-boat captain. For this, I received a second certificate of success. The most recent KPH test took place in Jan. It used a paper-pencil one-time-pad instead of Enigma, and participants got to be a spy receiving a “numbers message” from MI6.

Enigma Flaws

While not directly pertinent to the KPH test, there are a number of cryptographic flaws in the Enigma design and how it was used that contributed to the Allies breaking its code in the early 40's. In fact, the Polish had cracked the early Enigmas in the later 30's which gave the Allies a major head start on being able to read the German traffic. Germany has a long history in mathematics and one might have thought they would design unbreakable codes, but, for whatever reasons they did not

The Reflector: The reflector at the end of the rotors which sent the current back through the rotors did add to the complexity of the substitution cipher. However, since the current obviously had to be routed back through the rotor stack using different conductors from the forward routing, Enigma would never encrypt a letter into itself. The prime goal in cryptography is to have the ciphertext be indistinguishable from a truly random sequence of all the letters with equal probability and this flaw violated that dictum.

Early in the British code breaking effort, a clerk was making a table of the frequency that each letter occurred in the ciphertext of an intercepted message. She realized that there were no “L's” which meant, of course, that the plaintext of the message contained nothing but “L's.”



That led to decoding a major part of the wiring schematics for the three rotors, and knowledge of which ones were used for this message. Why the operator would send such a message is unknown, but this occurred several times during the war.

Message Key: Another cryptographic absolute is, “A key must never be reused for different plaintext.” While the Enigma procedures specified a new message key for each message, that often didn't happen. Operators were prone to select predictable 3-character combinations that followed a pattern in a string of messages sometimes a whole day's traffic used the same message key. Even the procedure of encrypting the 3-character random selection twice in each message led to breakthroughs in the code cracking.

Re-encryption: A third cryptographic absolute is, “Never encrypt the same plaintext with two different keys.” The German Army, Air Force, and Navy divided their communications into networks and sub-networks. Messages would arrive on one sub-net, be decrypted, routed to another sub-net, and re-encrypted with another key. Once the Allies had broken even parts of messages, they could recognize those that had been re-encrypted.

Formatted Plaintext: Germany encrypted practically everything which was an unwise choice because many of the messages intercepted by the Allies were just routine weather/sea conditions, vessel condition, or position reports which had fixed formats with many repeating plaintext strings of characters. This encrypted the same text multiple times with multiple keys, a code breakers paradise.

Bletchley Park



The major efforts at breaking the Enigma codes took place at Bletchley Park by a large staff led by Alan Turing, a gifted mathematician. Bletchley was originally a country manor house [closely resembling a castle] in the English countryside and fairly safe from the bombardment in the cities. A number of temporary “huts” were added on the grounds to accommodate the growing staff, a great number of which were women since the men were off fighting on the mainland.

The work there made it possible to reduce the number of key combinations that needed to be tried by brute force to a manageable number. Turing then designed an electromechanical device which he named a Bombe that could automatically test these combinations very rapidly ... well, for the day.

The British name many places and things rather strangely to our ears. When I hear the word “Bletchley,” I somehow just know it's British, and I can't help immediately associating it with what it sounds like. It is now a historic landmark in England although the external huts are gone.

The KPH cryptographic tests fall into one of the smaller, less known nooks of ham radio but have been a challenge, at least for me, and a lot of fun. They conducted a third test in Jan 2024 emulating a “numbers” message [still used to communicate to spies], using a one-time-pad instead of the Enigma machine. Perhaps Agent 447 can be coerced into revealing the details of that message in the future should the JUG again end up with many blank pages.



Kay Anderson, K6KO – SK

Kay Odell Anderson passed away Thursday, January 11, 2024, in Lodi, CA at the age of 81. She was born in Winfield, Kansas on April 22, 1942, the daughter of the late Esther Odell (Bell) and Horace Odell. Kay was predeceased by her husband of 45 years, Kenneth Owen Anderson of Pine Grove, CA; and is survived by stepson Howard (Susan) Anderson of Siler City, NC; stepdaughter Kathryn (Scott) Priller of Elkridge, MD; and her grandchildren, Travis, Jacob, Rachel, Isabel, and Walter.

Kay spent her early childhood traveling from town to town in Kansas and Nebraska for her father's work. Her family settled in Anthony, Kansas when she started school. After graduating from Abilene Kansas High School in 1960, she attended Kansas University and the Automation Institute of Kansas City. She moved to Missouri to work with Missouri National Life Insurance. In 1974 she moved to Palo Alto, California and began working at Philco-Ford Corp. That same year, while working together, Kay met her husband, Ken. They married in 1977. From 1982-1984 the two moved to England while working with Ford Aerospace. During their time there they enjoyed traveling throughout Europe. Kay continued to work in her field for 20 years and she retired from Lockheed Martin.

In 1996, Kay and Ken moved to Amador County. Kay earned her amateur radio license and was active in the Ham Radio Community with Ken. She spent time participating in the Amador County fair, where she entered many of her fruit preserves and needlework, and won many first-place ribbons. She was also passionate about genealogy research and had chronicled her and Ken's family's lineage.

Kay will be remembered by her family as thoughtful and generous with a wicked dry sense of humor. She loved spending time with her husband, children, and grandchildren. She loved being Nana. Her spirit will forever be in their hearts and will be dearly missed by all of them. Kay and Ken will be interred together at the Pine Grove Cemetery in Pine Grove, California.





Tube of the Month

Norm Wilson, N6JV

Visit the Tube Museum at n6jv.com

TA4/500

Ein Hüttinger



I once ran across an interesting tube while shopping on a European tube site. Had no idea who made it, but it looked like an old classic German tube. It turned out to be a TA4/500 made by a German company called Hüttinger. The TA indicates that it is a transmitting triode with a tungsten filament. The 4/500 translates to a maximum of 4000 volts and an output of 500 watts. Some research found that it had a 7.5 volt at 17.5-amp filament and would operate up to 50 MHz. It is similar in many ways to an EIMAC 150T tube. The base is typically German with banana plugs and the plate and grid pins are fitted with knurled nuts. The asbestos blanket to act as a heat proof cushion is also typical. The tube is 12.25 inches tall.

The Hüttinger company started in 1922 making small appliances in Freiburg, Germany. They produced electromedical devices like diathermy machines and in 1936 started producing their own line of amplifier/oscillator tubes. Three types were produced including the TA4/500. Other products were made with the start of WWII and the size of the company required a move for expansion. Production quickly ended in late November 1944 when the RAF carpet bombed Freiburg. They quickly rebuilt some capabilities and produced small parts through the end of the war. After the war, the company expanded their product lines into RF applications and eventually into power supplies used in semiconductor production and eventually into lasers. They also produced a more modern line of high-power vacuum [tubes](#) that are more common than the early types. The company was merged into the Trumpf (sounds familiar) Maschinenfabrik Corporation where it still operates in the medical technology and power supply field.





Editor Notes



Welcome home to the TX5S crew! Chris was even able to prepare and forward his column while enroute home on a less than glassy sea. The JUG is hoping for a spell-binding, first-person(s) account of a very successful expedition for a future issue.

When the editor begins publishing his own articles, you can be certain the need for inputs to the JUG has become critical! On the subject of KPH, for those who have just arrived from the Kuiper Belt, the MRHS also holds the amateur call K6KPH which is usually active during their Saturday sessions. They use the KPH transmitters, reduced to 1,500 W. For a QSO, just park on their QRG and send your call repeatedly. The op has other duties but he may respond with <yourcall> QRYn QRX, meaning “I’m busy, you’re number n in the queue, I’ll call you.” Signal reports for KPH are welcome, a typical report might be ... QLB KPH 500 QSA3/6 QSA5/8 QSA4 which translates to, “I have monitored KPH and report signals on 500 Kcs to be strength 3, 6 Mcs strength 5, 8 Mcs strength 4”. When dealing with ancient maritime radio, the more reverent “Kcs” and “Mcs” are typically used since for most of it’s life, “Hz” hadn’t been invented.

NCCC Volunteer Job Opening NAQP Team Flogger

Volunteers

Charter Member: Rusty Epps, [W6OAT](#)
Awards Chair: Gary Johnson, [NA6O](#)
California QSO Party Chair: Dean Wood, [N6DE](#)
QSL Mgr [[K6ZM](#)]: vacant
QSL Mgr [[K6CQP/N6CQP/W6CQP](#)]: [Dean Wood, N6DE](#)

NAQP Teams: **Your Name/Call Here!**

NA CW Sprint Teams: Bob Vallio, [W6RGG](#)
NCCC Email Reflector Admin: Phil Verinsky, [W6PK](#)
Worked All CA Counties Award: Fred Jensen, [K6DGW](#)

Looking through the hard drive on this computer, I find that I have been flogging for teams and logs for the six NAQP's each year for about ten years now. I owe Dean, N6DE, a giant package of thanks for providing me with a lot of “adult supervision” over that time. Dean knows NCCC contesters and their stations well. It's been a lot of fun but it's time to pass the title on.

NAQP's occur six times a year in a winter group of three and three again in the summer. I will support the new Flogger however I can, including sharing the processes I've worked out over my tenure if desired.

To apply, just contact President David, KO6M or VP/CC Chris, N6WM and they'll make sure your name and call appears in the Volunteers listing in the JUG. If you're wondering how it became “NAQP Flogger” ... Many years ago, we were talking with the daughter of good friends at the Roseville Macy's department store. She worked for Estee Lauder and was giving presentations at the store. She finally had to excuse herself saying, “Well, I'm going to have to get up and flog my products, I need the money.” When I began putting NAQP teams together, it seemed like an activity analogous to Tanya's.



NCCC Membership Information

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

Life Memberships

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

JUG Articles Wanted!

Your help allows us to produce a quality newsletter. Please consider submitting an article! The editor welcomes any and all relevant articles for inclusion in the JUG. The preferred format is plain, unformatted ASCII text, MS Word (.doc/.docx) are acceptable. Indicate the insertion point and title of diagrams and pictures in the text and attach photos/diagrams separately. Pictures should be as high a resolution as available. Please do not spend time formatting your submittal, the publication templates will re-format everything. Send your material to k6dgwnv@gmail.com indicating "JUG Submittal" in the subject.

Northern California Contest Club Reflector—Guidelines

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

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MEN WOMEN PROMOTIONAL PRODUCTS

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

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

If you have questions, contact the NCCC secretary at: secretary.nccc@gmail.com



Northern California Contest Club

[NCCC Lands' End Store](#)

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

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

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

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



Northern California Contest Club

Excellence In Amateur Radio Contesting

K4 HIGH-PERFORMANCE DIRECT SAMPLING SDR



A direct-sampling SDR you'll love to use

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

Modular, hybrid architecture adapts to your needs

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

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

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

Comprehensive I/O, plus full remote control

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

K4 KEY FEATURES

Optimized for ease of use

Modular, upgradeable design

7" color screen with touch and mouse control

ATU with 10:1+ range, 3 antenna jacks

Up to 5 receive antenna sources

Full remote control via Ethernet



The K4 interfaces seamlessly with the KPA500 and KPA1500 amplifiers

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



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IC-9700 | All Mode Tri-Band Transceiver
 • VHF/UHF/1.2GHz • Direct Sampling Now Enters the VHF/UHF Arena • 4.3" Touch Screen Color TFT LCD • Real-Time, High-Speed Spectrum Scope & Waterfall Display • Smooth Satellite Operation



IC-718 | HF Transceiver
 • 160-10M** • 100W • 12V operation • Simple to use • CW Keyer Built-in • One touch band switching • Direct frequency input • VOX Built-in • Band stacking register • IF shift • 101 memories



IC-V3500 | 144MHz FM Mobile
 • 65W of Power for Long Range Communications • 4.5 Watts Loud & Clear Audio • Modern White Display & Simple Operation • Weather Channel Receive & Alert Function



IC-7851 | HF/50MHz Transceiver
 • 1.2kHz "Optimum" roofing filter • New local oscillator design • Improved phase noise • Improved spectrum scope • Dual scope function • Enhanced mouse operation for spectrum scope



IC-705 | HF/50/144/430 MHz All Mode Transceiver
 • RF Direct Sampling • Real-Time Spectrum Scope and Waterfall Display • Large Color Touch Screen • Supports QRP/ORPp • Bluetooth® and Wireless LAN Built-in



IC-2300H | VHF FM Transceiver
 • 65W RF Output Power • 4.5W Audio Output • MIL-STD 810 G Specifications • 207 alphanumeric Memory Channels • Built-in CTCSS/DTCS Encode/Decode • DMS



IC-7300 | HF/50MHz Transceiver
 • RF Direct Sampling System • New "IP+" Function • Class Leading RMDR and Phase Noise Characteristics • 15 Discrete Band-Pass Filters • Built-In Automatic Antenna Tuner



IC-7100 | All Mode Transceiver
 • HF/50/144/430/440 MHz Multi-band, Multi-mode, IF DSP • D-STAR DV Mode (Digital Voice + Data) • Intuitive Touch Screen Interface • Built-in RTTY Functions

IC-V86 | VHF 7W HT

• 7W Output Power Plus New Antenna Provides 1.5 Times More Coverage • More Audio, 1500 mW Audio Output • IP54 & MIL-STD 810G-Rugged Design Against Dust & Water • 19 Hours of Long Lasting Battery Life • 200 Memory Channels, 1 Call Channel & 6 Scan Edges



IC-7610 | HF/50 MHz All Mode Transceiver
 • Large 7-inch color display with high resolution real-time spectrum scope and waterfall • Independent direct sampling receivers capable of receiving two bands/two modes simultaneously



IC-2730A | VHF/UHF Dual Band Transceiver
 • VHF/VHF, UHF/UHF simultaneous receive • 50 watts of output on VHF and UHF • Optional VS-3 Bluetooth® headset • Easy-to-See large white backlight LCD • Controller attachment to the main Unit



IC-T10 | Rugged 144/430 MHz Dual Band
 • Disaster Ready - Excellent Fit for Your Emergency Bag • Loud Audio - New Speaker Design • Long Battery Life - Up to 11 Hours • FM Broadcast & Weather Channels



IC-R8600 | Wideband SDR Receiver
 10 kHz to 3 GHz Super Wideband Coverage • Real-time Spectrum Scope w/Waterfall Function • Remote Control Function through IP Network or USB Cable • Decodes Digital Incl P25, NXDN™, D-STAR • SD Card Slot for Receiver Recorder



ID-5100A Deluxe VHF/UHF Dual Band Digital Transceiver
 • Analog FM/D-Star DV Mode • SD Card Slot for Voice & Data Storage • 50W Output on VHF/UHF Bands • Integrated GPS Receiver • AM Airband Dualwatch

ID-52A | VHF/UHF D-STAR Portable

• Bluetooth® Communication • Simultaneous Reception in VV, UV, VU and DV/DV • Enriched D-STAR® Features Including the Terminal Mode/Access Point Mode • UHF (225-374.995MHz) Air Band Reception



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FTDX101MP | 200W HF/50MHz Transceiver

- Hybrid SDR Configuration • Unparalleled 70 dB Max. Attenuation VC-Tune • New Generation Scope Display 3DSS • ABI (Active Band Indicator) & MPVD (Multi-Purpose VFO Outer Dial) • PC Remote Control Software to Expand the Operating Range • Includes External Power With Matching Front Speaker



FT-710 Aess | HF/50MHz 100W SDR Transceiver

- Unmatched SDR Receiving Performance • Band Pass Filters Dedicated for the Amateur Bands • High Res 4.3-inch TFT Color Touch Display • AESS: Acoustic Enhanced Speaker System with SP-40 For High-Fidelity Audio • Built-in High Speed Auto Antenna Tuner



FTM-400XD | 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



FTDX10 | HF/50MHz 100 W SDR Transceiver

- Narrow Band and Direct Sampling SDR • Down Conversion, 9MHz IF Roofing Filters Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High Speed Auto Antenna Tuner • Microphone Amplifier w/3-Stage Parametric Equalizer • Remote Operation w/optional LAN Unit (SCU-LAN10)



FT-891 | HF+50 MHz All Mode Mobile Transceiver

- Stable 100 Watt Output • 32-Bit IF DSP • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to a PC with a Single Cable • CAT Control, PTT/RTTY Control



FT-70DR C4FM/FM 144/430MHz Xcvr

- System Fusion Compatible • Large Front Speaker delivers 700 mW of Loud Audio Output • Automatic Mode Select detects C4FM or Fm Analog and Switches Accordingly • Huge 1,105 Channel Memory Capacity • External DC Jack for DC Supply and Battery Charging



FT-991A | HF/VHF/UHF All Mode Transceiver

- Real-time Spectrum Scope with Automatic Scope Control • Multi-color waterfall display • State of the art 32-bit Digital Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 inch Full Color TFT USB Capable • Internal Automatic Antenna Tuner • High Accuracy TCXO



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

- 50W Output Power • Real Dual Band Operation • Full Color TFT Display • Band Scope • Built-in Bluetooth • WIRES-X Portable Digital Node/Host Node with HRI-200



FT-5DR C4FM/FM 144/430 MHz Dual Band

- High-Res Full-Color Touch Screen TFT LCD Display • Easy Hands-Free Operation w/Built-In Bluetooth® Unit • Built-In High Precision GPS Antenna • 1200/9600bps APRS Data Communications • Supports Simultaneous C4FM Digital • Micro SD Card Slot



FTDX101D | HF + 6M Transceiver

- Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters Phenomenal Multi-Signal Receiving Characteristics • Unparalleled -70dB Maximum Attenuation VC-Tune • 15 Separate (HAM 10 + GEN 5) Powerful Band Pass Filters • New Generation Scope Displays 3-Dimensional Spectrum Stream



FT-2980R | Heavy-Duty 80W 2M FM Transceiver

- 80 watts of RF power • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users



FT-65R | 144/430 MHz Transceiver

- Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Clear Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, Alarm and Quick Home Channel Access



FTM-200DR | C4FM/FM 144/430MHz Dual Band

- 1200/9600bps APRS® Data Communications • 2" High-Res Full-Color TFT Display • High-Speed Band Scope • Advanced C4FM Digital Mode • Voice Recording Function for TX/RX



FTM-6000R | 50W VHF/UHF Mobile Transceiver

- All New User Operating Interface-E20-II (Easy to Operate-III) • Robust Speaker Delivers 3W of Clear, Crisp Receive Audio • Detachable Front Panel Can Be Mounted in Multiple Positions • Supports Optional Bluetooth® Wireless Operation Using the SSM-BT10 or a Commercially Available Bluetooth® Headset



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