

### CARC Membership Meeting

Tuesday 28 January 2020  
1700 Social      1730 Meeting  
1800 Program

Methodist Richardson Medical Center  
At Bush/Renner/Shiloh Intersection  
Conference Room A in Hospital Building

Subject:  
**"Show & Tell Night"**

## Local Club News

### Meeting Notice

See "Upcoming Meeting Highlights" later in this newsletter. Please note that there is no membership meeting in December – plan to join us on 28 January 2020.

### CARC Community Service Activities

**Siren Testing** Dennis Cobb WA8ZBT, John McFadden K5TIP and Jim Skinner WB0UNI participated in the Richardson emergency siren testing. The December test was conducted on 4 December. The sirens are monitored by amateur radio operators and reports made using the Richardson Wireless Klub (RWK) repeater at 147.120 MHz. Siren testing occasionally uses the University of Texas at Dallas (UTD) repeater at 145.430 MHz, which is designated as the backup repeater.

**Crime Watch Patrol** Jim Skinner WB0UNI participated in Richardson Duck Creek Crime Watch Patrol (CWP). CWP members, after successful completion of Richardson Police Department Training, patrol their neighborhoods and report all suspicious activities to the Police Department.

### CARC Christmas Dinner Big Success

Seventeen members and two guests attended the 2019 CARC Christmas Dinner held on December 10th at Aboca's Italian Grill in Richardson. The Club, also welcomed three

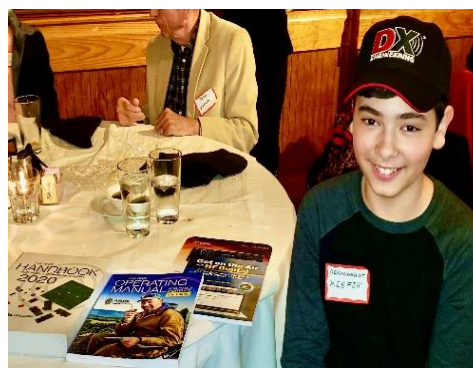
new members: Adam, KI5FJE, his mom Faith, and dad Tom Wright, NN2X.

Also attending were: Jim Brown, AF5MA, Katy Brown, Bob Kirby, K3NT, Cindy Kirby, Frank Krizan, KR1ZAN, Nancy Krizan, K5NCK, John McFadden, K5TIP, Liz McFadden, K5LIZ; Mike Schmit, WA9WCC, James Skinner, WB0UNI, Rose Skinner, Jim Sturges, KC5QGK, Rohan Thomas, KG5RCN, Betty Weeks, K5BTY, Kerry Weeks, K5WKS, and Joe Wolf N5UIC.

The food and fellowship were great. Everyone seemed to have a great time, especially when the door prizes were drawn. Winners were (not necessarily in the order drawn):

- Cindy Kirby: The ARRL 2020 Handbook for Radio Communications
- Joe Wolf: The ARRL Operating Manual
- Rose Skinner: ARRL Hints and Kinks for the Radio Amateur
- Faith Wright: ARRL Get on the Air with HF Digital
- Jim Sturges: ARRL 2020 Amateur Radio Calendar
- Liz McFadden: Aboca's \$25 Gift Certificate
- Mike Schmit: HRO \$25 Gift Certificate
- Jim Brown: HRO \$25 Gift Certificate
- Bob Kirby: ICOM Mouse Pad
- Tom Wright: ICOM Mouse Pad
- Jim Skinner: ICOM Mouse Pad

Adam, KI5FJE was showered with gifts from their Door Prize winnings. Cindy Kirby offered the new ARRL Hand-



book, Joe Wolf contributed the new Operating Manual, Faith Wright (Adam's mom) gave him the HF Digital manual, & Tom Wright (Adam's dad) gave him the mouse pad which includes

a picture of ICOM's new dream radio. He, also, received the DX Engineering hat that the door prize tickets were drawn from. Adam is 13 years old and recently got his Tech ticket. He's starting to study for his General. (Continued on page 3)

CARC OFFICERS			
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**VE SESSIONS**

**Collins Amateur Radio Club (CARC)** Test sessions take place on fourth Tuesdays, immediately following the regular CARC monthly membership meeting (about 7:30 p.m.). The test sessions are held in Conference Room A of the Methodist Richardson Medical Center, at the Bush/Renner/Shiloh intersection in Richardson. Walk-ins are welcome, but it's best to register with the lead examiner, Kerry Weeks, at [weeks.kerry@gmail.com](mailto:weeks.kerry@gmail.com) or by phone at (214) 478-3230.

**Dallas** tests are held on the fourth Saturday of each month at 1000 hrs. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD 972.917.6362

**Irving** tests are held on the third Saturday of each month at 0900. Fifth and Main St. Contact Bill Revis, KF5BL 252-8015

**McKinney** VE test sessions are held at the Heard Museum the first Sunday of the month. The address is 1 Nature Place, McKinney TX. The time of the testing is 1430, ending no later than 1645. **Note: no tests given on holiday weekends.**

**Garland** testing is held on the fourth Thursday of each month, excluding November, and begins at 1930 sharp. Location is Freeman Heights Baptist Church, 1120 N Garland Ave, Garland (between W Walnut and Buckingham Rd). Enter via the north driveway. A HUGE parking lot is located behind the church. Both the parking lot and the Fellowship Hall are located on the east side of the church building, with

big signs by the entrance door. Contact Janet Crenshaw, WB9ZPH at 972.302.9992.

**Plano** testing is on the third Saturday of each month, 1300 hrs at Williams High School, 1717 17<sup>th</sup> St. East Plano. Check Repeater 147.180+ for announcements.

**Richardson** The Richardson Wireless Klub (RWK) VE team hold license testing on the third Thursday of each month at St. Barnabas Presbyterian Church, 1220 West Beltline Rd. Testing begins at 1900 hrs in room 12. Enter through the Northern most door on the east side of the church building. For further information contact Don Klick KG5CK. 972.464.2889 or E-mail [rwkhamtest@gmail.com](mailto:rwkhamtest@gmail.com).

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**President and VP Messages**

Well we are just a few days away from Christmas Day! I hope everyone had a good time at the CARC Christmas dinner. As you know I was not able to attend, due to another event. I attended the Dallas Professional Photographers Association awards dinner, where I was awarded the year end Second Place award for my category, along with a Silver Star Medal for my contest awards.

Just this past week we heard that our funding request for 2020 was approved! We should be receiving a check for about \$4500 from the company in just a few days or weeks. This will allow us to make the purchases we approved at last month's meeting, which will give us added capabilities for our station.

I hope everyone has a great Christmas and safe holiday season!

73's,  
Gene, K1GD  
CARC President

**Secretary's Report**

26 Nov 2019

President Gene Duprey K1GD called the meeting to order at 1735.

The following were present at the meeting:

Jim Brown	AF5MA
Bob Coulbourne	W4FTD
Mike Dooley	N5BGZ
Gene Duprey	K1GD
Bob Kirby	K3NT
Frank Krizan	KR1ZAN
Daryl Morgeson	AF5QJ
Mike Schmit	WA9WCC
Jim Skinner	WB0UNI
Kerry Weeks	K5WKS
Milton Withers	AD5XD
Joe Wolf	N5UIC

**Officers and Committee Reports:**

The monthly Secretary's Report is contained in this newsletter. Informal year-end reports were offered by the President, Secretary and Activities Chairman; they are summarized herein.

President Gene Duprey K1GD discussed efforts in the past year to keep the club active and relevant through the transition from Rockwell Collins to UTC Collins Aerospace as a club sponsor. He also reviewed equipment purchases made throughout the year.

Secretary Jim Brown AF5MA stated that his work was fully contained in the 11 monthly reports filed during the year.

Activities Chairman Frank Krizan KR1ZAN reviewed the broad range of programs presented during the year and the actions taken to establish very successful Volunteer Examiner (VE) sessions following each monthly meeting that have grown the ranks of licensed operators.

**Old Business:**

Last month's discussion on club plans for next year continued, leading to a decision on equipment purchases for the current and following year. Kerry Weeks K5WKS moved to accomplish the following using current club funds and funding from next year as available from our sponsor:

- Purchase of Elecraft KPA1500 Amplifier
- Purchase of Flex-6600 SDR Transceiver (certified pre-owned)
- Repair of currently-owned Elecraft KPA500

The motion was seconded by Frank Krizan and approved by a majority of members present. A limit of \$8,000 was placed on the commitment. President Gene Duprey will include this plan in the club's annual submittal to the Collins Aerospace Activities Board before the end of the current fiscal year.

Bob Coulbourne W4FTD explained the process for obtaining personalized club shirts reflecting the new club callsign; he showed samples and discussed pricing. Jim Brown showed several candidate artworks for the shirts and encouraged suggestions for other variations. Further action was deferred to the January meeting.

Jim Brown offered a motion (seconded by Frank Krizan) to form a committee to draft a revised club constitution, continuing the effort begun last June but tabled pending resolution of other club matters. He proposed that a draft constitution be emailed to all full club members by the end of December 2019, along with absentee ballots for approval. After member discussion led by Kerry Weeks, Jim Skinner WB0UNI moved (seconded by Frank Krizan) that the motion be revised to eliminate use of absentee ballots, requiring approval only by members present at the January 2020 meeting. The revised motion was passed by a majority of members present. The revised motion approved the following actions:

1. Suspend Article XI, Section 2 of the Constitution requiring election of officers at the Annual Meeting (the November 2019 meeting).
2. Extend the terms of the current officers until a new constitution is in place.
3. Suspend Article XV of the Constitution requiring proposals for amendment to be submitted in writing at a regular membership meeting.
4. Authorize the President of the Club to appoint a committee to oversee the creation of a revised constitution. In lieu of the requirement of Article XV the final draft shall be distributed via email to all Full Members of the Club by the end of December 2019.

**New Business:**

There was no new business.

**Adjournment:**

The meeting was adjourned at 1848, followed by a program by Mike Dooley N5BGZ on "HF QRP Fox Hunting."

**CARC Christmas Dinner** *(Continued from page 1)*

He's got plenty of reading material now to occupy any idle time. (Photos by Joe Wolf, N5UIC)

Frank, KR1ZAN, acted as the Master of Ceremonies in the absence of our President, Gene Duprey, K1GD. Frank thanked everyone for attending and recognized the hard work of the Club's leadership in the past year, including:

- Gene Duprey, K1GD, who has served as President for more than 3 years;
- Jim Brown, AF5MA, our Club Secretary, who in addition to performing as Secretary, has also handled several Club projects;
- Rohan Thomas, KG5RCN, our Club Treasurer;
- James Skinner, WB0UNI, the CARC Newsletter Editor, who has been at the helm of SIGNALS for over 15 years;
- Bob Kirby, K3NT, our call sign and repeater Trustee and Station Manager, who wrestled with all the details of getting our Club call changed from W5ROK to N5CXX;
- Mike Hollingsworth, W5QH, our Webmaster, who maintains our public presence; and,
- Bill Swan, K5MWC, who has just taken over as Member Database Manager and is scrambling to get our membership records in order.

Frank forgot to mention his contribution, so it took recognition from Bob Kirby to thank Frank for his efforts as the Activities Manager.



At the ham banquet.  
 "NØUJR and His Friends" Cartoons used by Permission from Greg Trook, NØUJR

### November Program - QRP HF Fox Hunt

Mike Dooley, N5BGZ, presented our program at the November meeting on "QRP HF Fox Hunt." His program described the Fox Hunt, which is different from VHF and UHF fox hunts which employ direction finding techniques.



A QRP Fox Hunt is a series of 90-minute Amateur Radio events during which low power (QRP) stations, or "Hounds," attempt to make contact with specific QRP stations designated as "The Fox."

The QRP Fox Hunt is a test of various skills, including the ability to send and receive Morse Code, tune CW signals in a small pass band (about 10 kHz), find a station calling CQ FOX, follow the station's directions, and make contact. The QRP Fox Hunt is also a learning experience about propagation on the 80 meter and 40 meter bands in the US.



Mike identified a number of web links to provide more information on the Fox Hunts:

QRP Fox Hunt Home Page: <http://www.qrpfoxhunt.org/>

QRP Fox Hunt Primer: [http://www.qrpfoxhunt.org/fox\\_hunt\\_primer.htm](http://www.qrpfoxhunt.org/fox_hunt_primer.htm)

QRP Fox Hunt Discussion Group: <https://groups.io/g/qfox>

QRP Fox Hunt Results Maps: <http://www.k4oaq.com/fox/>  
[These maps show the location of the Fox and the locations of stations that worked the Fox. Included at distance circles.]

Even if you're not a regular CW operator, you can have fun tuning around for the Fox to see if you can find it. After a while, you'll want to jump in and acquire a "pelt."

### Upcoming Meeting Highlights

As the banner in the newsletter indicates, **there's no regular Membership Meeting in December**. Instead, we enjoyed good food, fun and fellowship at Aboca's Italian Grill in Richardson for our annual Christmas Dinner Party.

**Our next meeting will take place on Tuesday, January 28, 2020, 5:30 p.m.**, in Conference Room A at the Methodist Richardson Medical Center. Our program for January will be "Show & Tell Night". Several folks have already volunteered to show something they find handy for ham radio use or something they've built.

If you have a home-brew project you've recently completed, have a neat tool, device or software you'd like to show or possibly some neat gadget Ole' Santy dropped off under the tree that you think others would enjoy seeing, then sign up for Show and Tell.

**Send an email to Frank KR1ZAN ([kr1zan@arrl.net](mailto:kr1zan@arrl.net)) to let him know you would like to be on the list for Show & Tell Night.** We are asking for 2-to-5 minute presentations on what it is and how you use it for ham radio purposes. After all items have been shown, we'll have plenty of time for attendees to roam around the room and look over, maybe try out, whatever is shown and see if it works for their needs. There's no need for a formal video presentation but, if it helps, go for it.

**Also, our Club Constitution is being amended** to update the company name, along with other changes and additions. **You will be receiving the proposed Constitution via email in a few days.** Please look it over and come to the January meeting to discuss and vote.

**We'll be accepting nominations for officers for 2020 at the January meeting and will hold election of officers at the February meeting,** assuming the Constitution is approved.



### Sporadic SIGNALS

*captured by Frank KR1ZAN*

Art Donahue, W1AWX, of Franklin, Massachusetts, has posted his **"Tribute to a Century of Broadcasting" video** (<https://www.youtube.com/watch?v=iKRZJ5uO2Mw&feature=youtuve>) in recognition of the centennial of formal radio broadcasts. The video features a **complete scan of the AM broadcast band** (530 - 1700 kHz), with station IDs for all 118 AM radio channels.

Donahue told ARRL **he recorded these off the air using two long-wire antennas in the trees**. Each slide highlights one station on each frequency with call sign, location, power, day/night/gray-line reception, distance, and year of first broadcast, accompanied by audio of an actual station identification.

"If you ever spent evenings when you were a kid trying to hear long-distance radio stations on your AM radio, this video has what they all sound like today," Donahue said. **"I wanted to do something in honor of the KDKA broadcasting centennial next year** and thought I'd try to get every single channel recorded. It took a lot of time, patience, and good luck. You'll hear a lot of surprises on the video."

Donahue added, "It was a fun project to work on."

The Electronic Applications Radio Service (EARS) has announced that **the first Youth On The Air (YOTA) camp in the US is set to take place in June**. Sponsors hope the camp will become an annual event.

The inaugural summer camp will take place **June 21 - 26 at the National Voice of America Museum of Broadcasting** in West Chester Township, Ohio. The West Chester Amateur Radio Association (WC8VOA - <https://wc8voa.org/>) will host the event. EARS is a 501(c)(3) charitable organization dedicated to wireless technologies and activities.

According to the announcement, **the camp will focus on building peer and mentor relationships and taking amateur radio "to the next level."** Campers will learn and exercise on-the-air skills at special event station W8Y.

For more information, email Camp Director Neil Rapp, WB9VPG ([yotaregion2@gmail.com](mailto:yotaregion2@gmail.com)), or call (812) 327-0749. (Read more at <http://www.arrl.org/news/youth-on-the-air-camp-coming-to-the-americas>.)

**ARRL Self-Guided Emergency Communication Course EC-001-S** is now available on demand: <http://www.arrl.org/news/arrl-self-guided-emergency-communication-course-ec-001-s-is-now-available-on-demand>.

From the Nov. 27, 2019 ARRL Contest Update:

"The Daily DX and a number of other sources mentioned **Jim's, K1IR, presentation on tower safety** (<https://blog.thedrivenelement.com/2019/11/amateur-radio-tower-safety-presentation-for-the-billerica-ars/>) originally given to Billerica, Massachusetts ARS. It has also spurred an active discussion on a number of different email reflectors. **This is not about technique, it's about tower safety**, what the rate of "failures" in performing tower work on amateur radio towers tells us, and some suggestions on what practices need improvement to increase tower safety." Our NTX SM, Steve KG5VK, issued a bulletin mentioning this video, along with comments about tower safety.

Also, from the Contest Update of Nov. 27th:

"Rich, N1IXF, compiled a **chart of where FT8 and FT4 communications are happening** (<https://groups.io/g/RTTY/message/47684>). These are the conventional frequencies, and DXpeditions usually publish special frequencies where they will be operating." The chart also includes the normal and contest band segments for RTTY, the JA band limitations, and PSK 31 frequencies. There's also notes on Beacon frequencies to avoid. Very handy.

At the November CARC meeting, **Mike Dooley, N5BGZ**, told us about the **QRP HF Fox Hunts** (<http://www.qrpfox-hunt.org>) that take place on 40M and 80M on Tuesday and Thursday evenings, respectively. I happened to mention the **weekly Phone Fray**, on Tuesday evenings, for SSB ops, and Milt Withers, AD5XD, suggested the **RTTY NS** on Thursday nights for RTTY practice. Then, lo and behold, the **Contest Update** of Nov. 27th included the following:

"There are weekly events that you might want to take advantage of, especially if you find you have extra operating time over the next month or so. All times are US "local": On Tuesday evenings, check out the Phone Fray ([http://www.perluma.com/Phone\\_Fray\\_Contest\\_Rules.pdf](http://www.perluma.com/Phone_Fray_Contest_Rules.pdf)). Wednesday is for CWT (<https://cwops.org/cwops-tests/>), and on Thursday evening, start with RTTY NS (<https://www.ncccsprint.com/rttyns.html>) and switch to CW NS (<https://www.ncccsprint.com/index.html>). There are monthly QCX Challenges (<https://www.qrp-labs.com/party.html>) that occur on Monday evenings as well."

For those of you **interested in propagation**, whether it's for 'Why did the opening happen then?' or 'What months are best to contact XYZ?', you may find this study from the 425 DX News of Nov. 30, 2019 interesting.

**"REAL PROPAGATION IN 2018** ---> This new service offers 18,000+ real-life propagation charts from one ITU zone to another ITU zone over 2018:

<https://voacap.comvisualprop>. The raw data came from HamSCI, while data processing and visualization have been done by VE3NEA. The raw spot dataset included some 8 billion FT8 spots spanning from 6 to 160 meters (60

meters included) that were collected from sources such as PSK Reporter during the entire year."

From the Austin ARC SwapNet Newsletter of Dec. 1, 2019:

"DE Rick K5FNI: **Morse Code Jazz**... never heard this one before. From 1947... <https://youtu.be/teax-WYRH9A4æ>" ... and, "DE Dallas KD4HNX:

Since many hams may have an **HP SSD drive**, they should read this article from ZDNet before they **fail after 32,768 hours**: HPE tells users to patch SSDs to prevent failure after 32,768 hours of operation | [ZDNet https://zdnet.com/umamgpp](https://zdnet.com/umamgpp)"

Milt, AD5XD, mentioned on the RWK Discussion Group that **if you're looking for a Net**, take a look at: <http://www.rodscott.photography/n1yz-hf-new-net-list/>. He, also, mentions that a lot of nets use a free logging program called **NetLogger** <<https://www.netlogger.org/>> which allows the participants to see who is checked into the net.

From ARRL Web News:

The United Nations Amateur Radio Club, **4U1UN, at UN Headquarters in New York has been on the air recently**. Adrian Ciuperca, KO8SCA, recently was on site to replace and test a serial cable, and, while there, made some 100 contacts.

"Now that all works, we should hear the 4U1UN more often on the air," he commented. QSL via HB9BOU.

4U1UN is a separate DXCC entity.

They call it "**FT-8 Mondays**". The North Texas Microwave Society is holding an FT-8 informal net on 2 meters (144.174 USB) starting about 7:30 p.m on all Mondays. [The club has a regular weekly net Sunday nights at 8:00 pm Central Time on 144.260 MHz USB.

The NTMS also hosts **informal on-the-air activity nights** exploring different modes and frequencies.

These are currently:

Monday Night at 7:30 pm Central Time : FT8, 144.174 Mhz

Tuesday Night at 7:30 pm Central Time : FT8, 222.174 Mhz

Wednesday Night at 7:30 pm Central Time : FT8, 432.174 Mhz]

Their web site is: <http://ntms.org/> More information on other informal nets for 222 and 432 is there. A great place to **check FT-8 propagation** is: <https://pskreporter.info/pskmap.html>.

**I wish you all a safe, Blessed and Merry Christmas as well as a Happy and Prosperous New Year.**

## November CARC VE Team Report

by Frank Krizan. KR1ZAN

The November ARRL VE Test Session hosted by the Collins ARC VE Team had 4 applicants plus 1 re-test on Tuesday, November 26, 2019.

Two candidates passed their Technician exam: Katherine Braby, KI5HLA, of The Colony, and, Nicholas Wentink, KI5HLB, of Dallas. A total of 6 exam elements were administered. Congratulations! And, by the time you read this, Katherine may have obtained the vanity call of KB5KJB.

VEs taking part in November were Kerry Weeks, K5WKS, Daryl Morgeson, AF5QJ, and, Frank Krizan, KR1ZAN.

**There will not be a VE Test Session in December since it would be on Christmas Eve.** Our next Test Session will take place on Tuesday, January 28, 2020, immediately following the regular CARC monthly membership meeting (about 7:30 p.m.). This test session will be held in Conference Room A of the Methodist Richardson Medical Center, at the Bush/Renner/Shiloh intersection in Richardson. Walk-ins are welcome, but it's best to register with the lead examiner, Kerry Weeks, at [weeks.kerry@gmail.com](mailto:weeks.kerry@gmail.com) or by phone at (214) 478-3230.

## Radio Fiesta 2020 - Now a 2 Day Event



A long-time tradition in San Antonio is the San Antonio Radio Club's annual Radio Fiesta. This event brings together over 600 amateur radio operators, vendors, and those interested in the hobby for two days of exploration, testing, and informational sessions.

Radio Fiesta 2020 is scheduled for Friday, January 10, 2020 and Saturday, January 11, 2020. The operating hours will be 1:00 – 5:00 pm Friday and 8:00 am to 2:00 pm on Saturday. Setup will be in the morning of those days. The location is the Schertz Civic Center, 1400 Schertz Pkwy, Schertz, TX (about 20 miles northeast of San Antonio).

In addition to expanded number of Vendor and Flea Market tables, there will be a tailgate area on Saturday, presentations, and amateur radio license testing. Tables and tickets are being handled by Eventbrite. Reserve your space at [Eventbrite.com \[https://sarc-radio-fiesta.eventbrite.com/\]](https://sarc-radio-fiesta.eventbrite.com/). **This event has sold out the last three years, so don't delay.**

140 Vendor tables and plenty of FREE parking available. Additional information available at <https://w5sc.org/radio-fiesta-2020-information/>.

Rosendo M Guzman, N5YBG  
President-SARC  
210-323-0043  
[rosendo.guzman@w5sc.org](mailto:rosendo.guzman@w5sc.org).

## Upcoming Events

<b>Daily</b>	DFW Early Traffic Net (NTS) at 6:30pm 146.88 – PL 110.9Hz
<b>Daily</b>	DFW Late Traffic Net (NTS) at 10:30pm 146.72 – PL 110.9Hz
<b>Daily</b>	Texas CW Traffic Net at 7:00pm on 3541 KHz and at 10pm on 3541 KHz <a href="http://www.k6jt.com">www.k6jt.com</a>
<b>1<sup>st</sup> Wednesday</b>	Richardson Emergency Siren Test. At noon using the Richardson Wireless Klub (RWK) repeater at 147.120 MHz.
<b>2<sup>nd</sup> Wednesday</b>	ARES North Texas HF Net Every month—3860 KHz at 8:30 pm—9:30pm
<b>JANUARY</b>	
<b>2-4</b>	<b>Straight Key Night</b> This event is dedicated to celebrating our CW heritage. Participants are encouraged to get on the air and simply make enjoyable, conversational CW QSOs. The use of straight keys or bugs to send CW is preferred. No points are scored and all participants are winners. Operation is from 0000 through 2359 UTC. Details at <a href="http://www.arrl.org/straight-key-night">www.arrl.org/straight-key-night</a> .
<b>4-5</b>	<b>RTTY Roundup</b> Objective: Amateurs worldwide contact and exchange QSO information with other amateurs using digital modes on 80, 40, 20, 15, and 10 meter bands. Any station may work any other station. Stations may be worked once per band, regardless of mode. Operation is from 1800 Saturday thru 2400 UTC Sunday. Details at <a href="http://www.arrl.org/rtty-roundup">http://www.arrl.org/rtty-roundup</a>
<b>18-20</b>	<b>JANUARY VHF</b> Objective: For amateurs in the US and Canada to work as many stations in as many 2 x 1 degree Maidenhead grid squares as possible using authorized frequencies above 50 MHz. Stations outside the US & Canada may only work stations in the US and Canada. Operation is from 1900 Saturday thru 0359 UTC Monday. Details at <a href="http://www.arrl.org/january-vhf">http://www.arrl.org/january-vhf</a>
<b>FEBRUARY</b>	
<b>10-14</b>	<b>School Club Roundup</b> Objective: To exchange QSO information with club stations that are part of an elementary, middle, high school or college. Sponsored by the ARRL, its Hudson Division Education Task Force and the Long Island Mobile Amateur Radio Club (LIMARC). The event runs from 1300 UTC Monday through 2359 UTC Friday. A station may operate no more than 6 hours in a 24-hour period, and a maximum of 24 hours of the 107 hour event. Details at <a href="http://www.arrl.org/school-club-roundup">http://www.arrl.org/school-club-roundup</a> .

## Using the N5CXX Packet Radio Node and BBS Part 1

by Steve Phillips, K3JT

This is the first in a short series about using the N5CXX packet radio system and packet radio in general. This installment provides information about what packet radio is, how to get on the air with it, and how to use the N5CXX bulletin board system. Future installment(s) will deal with using your packet station for far-away node access (using the COL node for relay) and optionally Winlink 2000 communication (which does not use the N5CXX station).

NOTE: This was originally written several years ago, so some things have changed but it has been edited to be more-or-less current.

As most of you know, the Collins Amateur Radio Club maintains a packet radio Bulletin Board System (BBS) that operates on 145.05 MHz. The system consists of a Kantronics KPC-3 Plus Terminal Node Controller (TNC), an old, 25 Watt, 2 meter transceiver, a 13.5 Volt power supply, and an antenna. This equipment is housed in the same "Penthouse" as the N5CXX repeater.

If you don't know anything about Packet Radio, there are many good books available and quite a bit of "free" information on the Internet. Just do a Google search for "Packet radio". It has been around since the 1960's, but did not make it to the ham bands until around 1978. The Tucson Amateur Packet Radio (TAPR) club was instrumental in getting things started, including supplying low-cost kits for basic TNCs back then. Since I've been using packet radio since the early 1980's, I have seen it swell in popularity and wane again as higher speed digital modes and the Internet became available for use.

Packet radio uses a protocol called AX.25, which is an adaptation of the IEEE "standard" X.25 protocol set, tailored for amateur radio use. This protocol defines the format of the data packets (hence the name "packet" radio) that are sent and received by the TNCs. This is a "bursty" mode, in that a burst of data is sent, then an acknowledgment is received, before the next burst is sent. It is an error-free protocol since checksums are used and each packet (burst) must be acknowledged as received correctly.

It is useful for both HF and VHF communication, although the speeds are quite slow by today's standards. HF packet is limited to 300 bits per second (bps) while 144 MHz packet is limited to 1200 bps. At higher frequencies (i.e., 432 MHz and above), the allowed maximum data rate is 9600 bps, which is still a fraction of the 56 kbps rate that even dial-up Internet access modems could use or compares to 3200 bps using the Pactor-3 mode on HF.

It was originally intended and used for ham-to-ham direct communication, much like PSK31 and RTTY are still used

today. It was not long, however, before firmware (the program that makes a TNC run) was added to turn it into a "store and forward" messaging and bulletin board system. The BBS is now built into all TNCs being made. There were also many other additions to the basic TNC firmware such as NETROM and other "overlay" protocols to support the automatic relay of properly-addressed packet messages. Interconnections were also made to the Internet from many packet stations around the country. At that time, with 1200 bps modems the standard for dial-up Internet, the speeds were quite reasonable.

Packet radio reached its peak in the early 1990's, where VHF packet systems proliferated, allowing nearly complete continental U.S. coverage via relays and various networking "add ons" to the basic AX.25 protocol, as mentioned above. They slowly started to disappear as other modes such as Pactor and, later, PSK31 became available for use along with much higher speeds for Internet connections. Today, there are only a few isolated packet stations in use, Winlink 2000 having supplanted the majority of the original uses for packet radio. There may still be some "DX Cluster" packet stations in operation to keep DX'ers all around the country apprised of where and when rare stations are available for communication. This series will not deal with them, since the N5CXX station is not connected with those systems and most have moved to the Internet.

The N5CXX BBS is still used as a backup for formal national traffic system (NTS) messages between the Texas CW Net (of which I am a part) and the Dallas / Ft Worth local nets (DFW) on 2 meter FM. You are also welcome to do so, whether you have outgoing messages for distribution via the NTS or wish to take some of the local traffic that shows up there for delivery. Garland RACES also occasionally uses the BBS for emergency training but most operation has moved to Winlink.

There was some use of the BBS during the Katrina / Rita disasters both for outgoing inquiries into the NTS and for incoming health and welfare status messages. If you would like to learn more about the NTS, and you are proficient with CW (at least 15 to 20 wpm), you are welcome to check into the TEX net, which meets on 3541 KHz at 7 and 10 PM every night. There is also a Texas Slow Net that meets Tue/Wed/Thu at 7:45 PM, on 3570, if your CW is more in the "below 12 wpm" category, but operation is inconsistent. More information about them and also traffic handling is on the TEX website: <http://www.k6jt.com>. If you only have VHF capabilities, you can still participate via the DFW local nets, which also meet nightly. The first session is at 6:30 PM on the Dallas ARC repeater (146.88, PL 110.9), and the second session is at 10:30 PM on the Irving ARC repeater (146.72, PL 110.9). More information about them is on <https://www.dfwtrafficnet.org>.

We now return from our "commercial interruption." So what do you need in order to operate packet radio? Basically,



the same thing as is used in the N5CXX station plus a personal computer running Windows, Linux, or the Mac OS connected to the TNC. There are very few manufacturers of TNCs remaining, although used gear is still available at hamfests. Kantronics is the primary supplier of medium-priced TNC units, which can also work on other modes including APRS. Prices are pretty high for new units – over \$300 – since the demand has dropped so much (remember your econ classes about supply and demand and prices?). Hamcom might be a good place to look for a used TNC. Any of the Kantronics models (KPC-2 and up, along with KAMs) will work fine. You might also run across some older MFJ TNCs or even one of the TAPR TNC-2 units. They will also work with the N5CXX BBS, but setting them up may be difficult without a manual since cabling information and software is no longer readily available (but may be on the Internet for some units) to do the configuration automatically for you. I have purchased some of these used TNCs in the past and had luck with some, but others were basically “dead”, so be careful.

Interfacing to the TNC requires both a radio cable for audio in and out along with push-to-talk and a computer for RS-232 input / output at speeds from 300 to 9600 bps. With a manual (the club has one available that is OK for most Kantronics units) to tell how to wire up a cable to the radio, you should not have too much trouble. Some pre-made cables are available from Kantronics for some popular radios. The RS-232 interface is standard, and most USB to RS-232 adapters work fine with Windows and Linux. Since I have all Macintosh computers, I actually run Windows XP on the newer ones to use the USB to Serial converter and software such as the supplied HyperTerminal program. Configuring the serial ports and HyperTerminal can be somewhat of a pain, but experimenting will normally allow you to eventually succeed.

The radio side is straightforward as far as cabling is concerned. You can run the transmit audio and PTT line into the microphone connector of most radios and you can get the receive audio out of a rear-panel headphone jack on most of them, too. Some radios (such as my Yaesu FT-7800R) have a rear-panel connector just for packet radio use so you can leave the mic and earphone connectors alone (although fixed receive audio level is not generally good and it is better to use the earphone connector while adjusting the volume and squelch so the TNC “receive” light just comes on with a received signal).

It can be a little tricky to set the transmit audio level, too. The TNCs have a way to adjust this, and it may be necessary to do so to keep from over-deviating or under-deviating. Generally, deviation of 3.5 KHz is sufficient. I set the transmit audio levels using a 2nd receiver and try to match the “loudness” of my own received signal with that of a strong nearby packet node if no other means of checking deviation is available.

Finally, the radio must be able to switch between transmit and receive in less than about 250 ms (as I recall) for packet chit-chat to work properly. All newer radios can do this, but older ones may have trouble. The TNC also has optional commands that will allow it to work with slower switching radios, in some cases. I have a very old, crystal-controlled IC-22, 10 Watt, 2 meter radio that I have used on packet with success. It is my “backup” radio even now. Since packet is on fixed frequencies (145.01, .03, .05, .07, and .09), and I have all the crystals for those, it works fine.

The operating manual for your particular TNC will usually have enough information for you to connect the radio and computer sides and get them working fine. The “default” TNC settings must be changed only to enter your callsign. Most of the TNCs will then “remember” that. There are many other possible settings for packet use, but the defaults will generally get you up and running with a minimum of fuss. Again, the TNC manual will have all the needed information if you really want to tweak things and understand more about how it all works.

Now, assuming you have cabled up everything and can put out a signal, try to connect to N5CXX. The connect command is standard across all TNCs adhering to the TNC-2 protocols and is simply a “c” followed by the callsign. For our station, enter

```
cmd: c N5CXX or c N5CXX-1 to go directly to the packet BBS.
```

You will be greeted with a “connected to N5CXX” message from the TNC and a welcome screen from N5CXX as our TNC automatically routes you to the N5CXX-1 BBS. The dash numbers are for various uses such as BBS, direct communication, nodes, etc. Don’t worry about them for now.

It will look something like this on your computer screen:

```
cmd:c n5cxx
```

```
cmd:*** CONNECTED to N5CXX
```

```
N5CXX - Collins ARC Richardson TX (COL) N5CXX-1
PBBS, COL Node, COL Digipeater
```

```
[KPC3P-9.1-HM$]
```

```
78304 BYTES AVAILABLE IN 7 BLOCK(S)
```

```
THERE ARE 3 MESSAGES NUMBERED 2-2350
```

```
Welcome to the Collins Amateur Radio Club Packet BBS,
N5CXX-1
```

```
ENTER COMMAND: B,J,K,L,R,S, or Help >
```

At this point, you can experiment with the commands available (which are summarized in the B,J,K,L,R,S, or Help line):

Try h for help and you will get:

h  
 B(ye) PBBS WILL DISCONNECT  
 J(heard) CALLSIGNS WITH DAYSTAMP  
 J S(hort) HEARD CALLSIGNS ONLY  
 J L(ong) CALLSIGNS WITH DAYSTAMP AND VIAS  
 L [x [y]] [:] LIST MESSAGES x THRU y YOU CAN READ  
 L <|> call LIST MESSAGES FROM OR TO CALL  
 LB LIST BULLETINS  
 LC [cat] LIST CATEGORIES  
 LL n [:] LIST LAST n MESSAGES  
 LM(ine) LIST UNREAD MESSAGES ADDRESSED TO YOU  
 LO [+|-] LISTING ORDER  
 LT LIST TRAFFIC  
 LTn DISPLAY LOCATION TEXT n=1-4  
 NL n SET PAGE SIZE WHEN READING MESSAGES  
 K(ill) n DELETE MESSAGE NUMBER n  
 KM(ine) DELETE ALL READ MESSAGES ADDRESSED TO YOU  
 R(ead) n DISPLAY MESSAGE NUMBER n  
 RH n DISPLAY MESSAGE n WITH HEADERS  
 RM(ine) READ ALL MESSAGES ADDRESSED TO YOU  
 S(end) call SEND MESSAGE TO callsign  
 S[B|P|T] call SEND BULLETIN, PRIVATE, or TRAFFIC  
 U(sers) DISPLAYS EVERYONE CONNECTED TO BBS  
 ENTER COMMAND: B,J,K,L,R,S, or Help >

That pretty well describes what you can do with the BBS. Most commands are a single letter, as shown, with optional text in parentheses. There are many categories for listing messages and for sending messages (P for private, B for bulletin, T for traffic). Only you and the addressee can read "private" messages while everyone can read bulletins and traffic.

Let's try each command on the prompt line. First J:

```
j
K5AGO 08/25/2019 15:29:09
KG6LE 09/01/2019 04:03:46
KD5HAL-10 09/05/2019 02:17:01
K5BS 09/05/2019 05:55:15
```

```
KC5LAA* 09/05/2019 06:19:51
KD7SEE 09/18/2019 11:24:26
AD5DM 09/21/2019 13:47:32
KE5YTA 10/12/2019 16:29:37
KB5PBM* 10/24/2019 10:35:16
KA5QDG-11 10/24/2019 10:46:39
AG5VW 10/29/2019 01:51:39
KB5NFT 11/20/2019 12:47:40
LAABOX* 11/26/2019 16:20:51
N5DCC-10* 11/26/2019 16:21:41
KG5JPG* 11/26/2019 16:21:48
W5IRP-10 11/30/2019 01:04:01
K6JT 12/01/2019 01:12:36
```

ENTER COMMAND: B,J,K,L,R,S, or Help >

This shows the list of the last several stations that were heard by the TNC. Note the list goes back in time. It will show the date and time the station was last heard and the list will add stations until the internal TNC limit is reached for storage of them.

Next, let's try sending a message:

```
sp k6jt
78304 BYTES AVAILABLE IN 7 BLOCK(S)
SUBJECT: Test
ENTER MESSAGE 3702--END WITH CTRL-Z OR /EX ON
A SINGLE LINE
Test Message
/ex
MESSAGE SAVED
ENTER COMMAND: B,J,K,L,R,S, or Help >
```

Let's get a list of the messages on the BBS. The welcome message said there were some messages and we just added one:

```
I
MSG# ST SIZE TO FROM DATE SUBJECT
3702 PN 18 K6JT K6JT 12/01/2019 01:14:16
Test
2350 B 289 ALL W5ROK 09/25/2010 19:13:13
Please Delete Messages
661 B 181 GRACES N5TIM 05/27/2007 04:07:05
Training
```

2 B 234 ALL W5ROK 08/28/2005 22:24:11  
National Traffic System Node

ENTER COMMAND: B,J,K,L,R,S, or Help >

So there is our new message (number 3702) along with some old bulletins, one from N5TIM for Garland RACES (GRACES) and the others from W5ROK for everyone. Note the date on the last one. The TNC was put into service in August of 2005 and has been running continuously since. Over 3000 messages have been handled in that time.

To read our test message, enter "r" and the message number:

r 3702

MSG#3702 12/01/2019 01:14:16 FROM K6JT TO K6JT

SUBJECT: Test

PATH: N5CXX

Test Message

ENTER COMMAND: B,J,K,L,R,S, or Help >

There it is, just as we entered it along with the timestamp. Once a message is read, it should be "killed" to make room in the TNC memory for more. The "k" command does this:

k 3702

MSG#3702 12/01/2019 01:14:16 FROM K6JT TO K6JT

MESSAGE DELETED

ENTER COMMAND: B,J,K,L,R,S, or Help >

To disconnect from the BBS, use the "bye" command:

b

\*\*\* DISCONNECTED

cmd:

The "cmd:" is the prompt from my local TNC to enter another command such as connect again.

So there you have it – how to get on packet and use the N5CXX BBS. The next installment will cover how to use the COL node built-in to the TNC to connect to some of those other stations seen above in the "j" command response as well as more advanced topics such as "digipeating" versus "node", and how to get on Winlink 2000 using your TNC.

73,

Steve K6JT





Richardson, Texas

**Mail Station 461-290**  
**P.O. Box 833807**  
**Richardson, TX 75083-3807**

**TO:**



Richardson, Texas

**CLUB STATIONS**  
 (972) 705-1349

**N5CXX REPEATER**  
 441.875 MHz +5 MHz Input  
 131.8 Hz PL - RX and TX

**N5CXX-1 PACKET BBS COL Node**  
 145.05 MHz

**N5CXX-N1, NRCXX-N2 & N5CXX-N3 HSMM-MESHNET Nodes 2.4 GHz**

**Tuesday 28 January 2020**  
**1700 Social      1730 Meeting**

**Methodist Richardson Medical Ctr**  
**At Bush/Renner/Shiloh Intersection**  
*Conference Room A in Hospital Building*

**NEXT SIGNALS INPUTS DEADLINE:**  
**→→→ 17 January 2020 ←←←**