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S I G N A L S

Rockwell Collins

Monthly Newsletter of the

Amateur Radio Club

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RCARC
Membership Meeting

Thursday, 27 January 2011
1700 Social   1730 Meeting

Methodist Richardson Medical Center
At Bush/Renner/Shiloh Intersection
Second Floor Conference Room 200

Subject: **Planning for Spring Activities and Possible Technical Presentation**

Local Club News

Meeting Notice. Make plans to attend the RCARC membership meeting this month. We will be planning for the coming spring and summer activities. If you want to know what is going on and have an opportunity to influence our plans, then this is a meeting you need to attend. There were no firm plans for a presentation at publication time, but it is still possible, so come and see. BE THERE OR BE SQUARE!

Holiday Party a Great Success! There were tons of food, fellowship and Ham Radio talk. Check out these pictures!

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VE SESSIONS

Dallas tests are held 4th Sat of each month at 10:00. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD (972) 917-6362

Irving tests are held 3rd Sat. of each month at 09:00. 5th 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 14:30, ending no later than 16:45. *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 Bill Reynolds, K8DNE, 972-475-3854.

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

Greenville testing is on the Saturday after 3rd Thursday, 1000 hrs at site TBA, contact N5KA, 903.364.5306. Sponsor is Sabine Valley ARA. Repeater 146.780(-) with 118.8 tone.

President's Message

CQ CQ CQ …. Happy New Year! Trust everyone had a good Christmas and close out of 2010 and is ready for a fresh start in 2011.

We plan to continue to meet at the Richardson, TX Methodist Medical center again this year and have scheduled the 2nd floor conference room (RM200) for the fourth Thursday of each month beginning 1/27/2011 from 5 PM to 7:30 PM unless other announcements are made. This year we will have others scheduled to use the room after us at 7:30 PM so we will need to wrap things up and clear out when they show up if we are running long.
Hope everyone had a Great Christmas and New Year!

The Christmas Party had a great turn out and based on the conversation levels and it's QRM level at times with all the various contacts and QSOs. Basically those that came out (around 20) brought cookies, drinks, and food. The kitchen was overflowing with everything from Texas Caviar, various types of chips & dip, Bar-Q meat balls, snack sandwiches, cheese balls, hot wings, wraps, and many other things to sample. We had musical talent upstairs, Christmas quizzes, and a formal dining room full of cookies, of which everyone took a collection before leaving. I recall hearing backpacking stories about Philmont, antenna discussions, stories from childhood Christmas's past, Christmas's present plans and even heard radio contacts. Thanks everyone for making the party a great success again this year. By the way, for Christmas the club ordered the Weather station approved during our November meeting and it arrived in early January—more about it to come.

In late December we also learned of other new things that would unfold during the New Year as labs' growth in building 461 resulted in the two office spaces outside our old doorway (which we've been using for almost a year) becoming consumed into a new lab at Rockwell Collins. The radio shack is still in the same basic location. However, it had to be cleaned out, along with everything we had in the area outside our shack, before Christmas break so a new doorway off the factory floor could be installed directly in line with the old doorway in the North West corner.

The Radio Club's main entrance is now complete and comes off the factory floor's main East to West hallway. You enter the Radio Shack from the North into its North West corner (almost directly across from the old doorway, which is now closed off). The radio benches are now located on the East (as before) and West walls, which appear to be the best configuration we could come up with given the size of our main assets. It currently appears that we will keep the Kenwood and Elecraft K3 on the East wall because of the number of existing cables going to this equipment, some of which should remain as short as possible. If we have time to redo the connections, we could possibly work out other configurations for the K3 and Collins S-Line equipment, allowing us more options and comfort while in long QSO sessions.

With less storage space than ever before, we will need to reduce the equipment we currently have in our less than ideal temporary storage (A Radio Club Lean Event). The current focus is to get four complete logical stations setup with the goal of making them operator friendly and operational, and confirm our moves have not damaged our ability to operate. We have a folding table we can setup behind the door if we need more space for repair or construction projects. Most of the tools and equipment that has

not moved back into the radio shack is still in temporary storage (in the furniture pool overflow area to our East).

The West radio bench (South end) now has most of the Yaseu FT-2000 equipment on it and can now be setup if you can work with that rig. The Collins 75-S line equipment (North end) still needs to be moved and setup. Let an officer know if you proceed with this effort. We could use help from anyone comfortable with this type of construction or check out effort.

We currently plan to dedicate one PC for each of the (4) operator positions; however, only two PCs are in current operational state. As far as radios go, only the Kenwood, mobile unit, and K3 have coaxial connections and power. The location of the equipment on the West wall will require coaxial and power changes or temporary adapters and extensions to make it operational in the new location, since the work benches have moved.

As far and I can tell, we have some good early goals for the club in 2011, including:

1. Inventory, bench test, and later develop installation plan and install the Weather Station.

2. Tune IT (MFJ-1798): if you recall, at the end of the year we put up the new antenna with temporary mounts and did not get to do the tune up. Please work with a group of two or more if you start to remove and tune the antenna (we've got to get our new installation hardware in place).

3. We could also use help in making new coax termination cables to better match our new Radio Shack layout or the Coax runs to the new antenna.

4. How about we Work All States in 2011 in our new room configuration (how many of those QSL cards will have your name on them as operator?). Please begin logging your contact and sending out those QSL cards (lets consider it best practice to give out our QSL cards before we receive).

5. Setup two new PC's (Possibly using Windows 7 or even Linux) and setup equipment on West radio bench (Yaseu FT-2000 and Collins 75S-line).

6. Setup weather station data logging and reporting solution.

7. Collins Amp installation and check.

8. Field Day 2011 (it not too early to get started)

9. VHF/UHF Contests and possibly TX QSO goals as well.

10. Have a successful 2011 and promote the use of Amateur Radio while also growing membership in our club and in ARRL.

Please make some of your own Radio related Goals for 2011. For example Paul Veenstra KC0TEG became an EXTRA during the break (Good Job). Look forward to your support of the club in coming year and for your help with meeting goals and milestones.

73, Good luck in 2011 and God Bless you and yours - K5SRT

Ross Terry, K5SRT
k5srt@arrl.net

Secretary's Report
December 18, 2010.

Tonight's meeting was a Christmas Party at the home of Ross Terry, President of the Rockwell Collins Amateur Radio Club, K5SRT. Those in attendance were as follows:

1. Ira Blum – K5IRA (M)
2. Kathy Cobb (F)
3. Michael Ketchum – K5MDK (M)
4. Amy Ketchum (N)
5. Bob Kirby – K3NT (L)
6. Cindy Kirby (F)
7. Dwight Ramsey – KE5SAS (M)
8. Mary Ramsey – KF5BXB (M)
9. Andrew Robinson – KE5SAK (M)
10. Chuck Samuel – K7NWM (A)
11. Mike Schmit – WA9WCC (M)
12. Jim Skinner – WB0UNI (M)
13. Rose Skinner (M)
14. Ross Terry – K5SRT (M)
15. Carol Terry (N)
16. Sydney Terry – K5SDT (F)
17. Lauren Terry (N)
18. Spencer Terry (N)
19. Paul Veenstra – KC0TEG (M)
20. Joe Wolf – N5UIC (M)
21. Snoopy was also in attendance, everywhere.

This represented 11 (M)embers, 1 (L)ife members, 1 (A)ssociate Member, 3 (F)amily members and 4 (N)on-members.

The agenda was simple, it included eating, talking, having a good time. The women congregated downstairs and played some Christmas games, while the men stayed upstairs and talked.

A CQ was made to a motorist passing through McKinney on his way to Oklahoma. Although he was invited to join the festivities, he could not attend. No details about this contact were recorded.

The meeting was casually adjourned around 10:30 pm.

Remote Control of Your Radio *by Steve K6JT*

There has been some discussion in recent months about setting up a radio at W5ROK that could be operated remotely by club members. Remote operation has many obvious advantages for the ham who is living in an apartment, in a housing development with deed restrictions against antennas, or in an area with a high noise level, such as from Broadband over Power Line.

Placing the radio in a location that has access to a good antenna installation and relatively low noise would appear to be the solution and the apartment-dweller's dream.

This article describes how remote operation of a Ten-Tec OMNI VII transceiver might provide radio control and operation from anywhere in the world via a high-speed Internet connection. The Ten-Tec OMNI has a built-in capability to interface with a 10-Base-T Ethernet cable attached to either a DSL/Cable/Clear modem directly or though a hub / wireless (802.11) router.

I chose the OMNI VII specifically for this capability so that I could operate it remotely when visiting relatives or friends to maintain oversight of the Texas CW NTS net, of which I am manager. I will not describe the OMNI itself other than to say it is a very good

performer in the Elecraft K3-class with a very sensitive receiver. I ordered mine with internal antenna tuner (a must for remote operation) and the optional 300 Hz Collins mechanical filter for the 2nd IF, since I operate CW almost exclusively. The rig has been reviewed in QST (2008) and other information is available from the Ten-Tec website, http://www.tentec.com/ including all manuals in PDF form. I do want to mention that the antenna tuner is superb, matching loads as high as a 10 to 1 SWR. It tunes my G5RV on all bands, 160 through 10, with no trouble. The rig also operates on 6 meters, but a separate antenna is needed (and the tuner cannot be used).

So what *is* needed for remote operation? Obviously, one needs the radio, and also a computer that will run Windows, any version from XP to 7. This should ideally be a laptop for take-along portability. An Internet connection of at least DSL (1.5 Mbps down, 256 Kbps up) speed that may be attached to the radio's standard RJ-45 Ethernet port is also required. Dial-up will not work here. The remote control is performed using a program provided by Ten-Tec called One-Plug. It is a fairly primitive implementation of the control codes to the radio written in Visual Basic with a very busy screen layout, but it does the job. Because VB is not known for speed, a fairly high performance computer is required, probably at least a 2 GHz Pentium class. I use all Macintosh computers, my 3 year old laptop having a 2.2 GHz Core 2 duo Intel processor. I can boot it into Windows XP directly, or run Windows and the Mac OS simultaneously via a 3rd party program called Parallels.

Accessing the radio via the Internet requires giving it an IP address of its own (when used with a router) and knowing the IP address of the DSL/Cable/Clear modem on the 'net. The latter is sometimes difficult when the service uses a dynamic IP address rather than static. However, I have found with my (Time-Warner) cable modem that the address does not change over the course of several days, once the modem has acquired the cable signal. There are techniques to determine the IP address that are described in the Ten-Tec documentation, but they require use of another computer on your LAN. The alternative is to purchase a static IP address from the service provider, if that is available.

Communication: The radio uses 6 UDP (User Datagram Protocol) ports to send and receive information to and from the radio. UDP is similar to TCP in that it is a protocol for sending and receiving packets across a network, but with two major differences. First, it is connectionless. This means that one program can send off a load of packets to another, but that's the end of their relationship. The second might send some back to the first and the first might send some more, but there's never a solid connection. If one just stops sending packets - that's fine.

UDP is also different from TCP in that it doesn't provide any sort of guarantee that the receiver will receive packets in the right order; in fact, there's no guarantee that the packets will arrive at all. All that is guaranteed is that the packet's contents, if they arrive, will arrive exactly as sent, without data corruption.

UDP is much faster than TCP because there's no extra overhead for error-checking above the packet level. For this reason, applications that use voice-over-IP like Skype or that have the need for near real-time responses requiring constant fast transmission will use UDP.

Unfortunately, that is the down-side to the OMNI VII implementation. In order to maintain a fairly close correlation between transmit and receive, they have used the UDP method. Ten-Tec does add a little more information to the UDP packets so that the radio (and One-Plug) can detect lost or out-of-order packets (and put them into the correct order), but there is no mechanism to request them again. They are just gone.

What does that mean? On voice, a lost packet results in a dropped syllable, which is generally acceptable as long as it does not happen too frequently. But on CW, at the speeds used in the traffic nets (25 wpm and above), it results in 1 to 3 Morse characters dropped. That does not work well for copying record traffic, needless to say, but it is OK for casual CW contacts.

How bad is it? There are 2 means by which packets can be lost – the UDP packet never makes it or the computer / radio cannot process them fast enough (I assume that is when they arrive out of order). Ten-Tec asserts that an error rate of less than 5% for dropped UDP packets and less than 5% for PC dropped packets is acceptable. I do not agree, however, at least for CW.

My own setup has a cable modem and wireless router with 2 satellite routers in a WDS configuration. The radio is connected to an Ethernet hub, which is connected to one of the satellite wireless routers. So data from the Internet goes thru 2 wireless routers before getting to the radio. My error rate with that configuration, with the computer communicating to the main router (the one hooked to the modem) runs about 0.5% for dropped packets. If the computer is connected directly via the Ethernet hub, the dropped packet rate is essentially zero. However, computer dropped packets still run about 0.6% regardless of the connection method. Interestingly, the computer drop rate is higher when running Windows XP natively than when running it in virtualization mode with Parallels. I surmise this is because Parallels (and Mac OS X) is able to use both CPU cores to divide the communications work from the processor work while Windows XP is limited to using a single core. Testing both, using the Windows Task Manager to view CPU usage, verified that only 1 core is used in native Windows, 2 in Parallels.
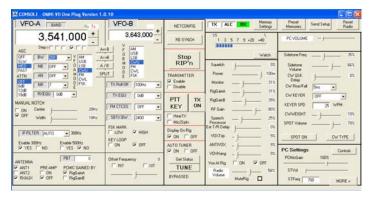
I am not sure why the computer drops occur, since the processor is more than fast enough, and the CPU usage never exceeded 30% in my tests. Investigation of the Visual Basic program showed that it uses timers rather than interrupts, and the program notes indicated timing was tricky. For that reason, I decided to attempt to write my own native Macintosh interface program. In addition, the supplied program's screen is way too busy and has a lot of unneeded "set and forget" parameters always visible.

Operating the radio remotely from my daughter's place near Rockwall yielded similar dropped packet rates as I see on my own (wireless) network, both UDP drops and computer drops, although UDP drops were slightly higher, but never more than 1%.
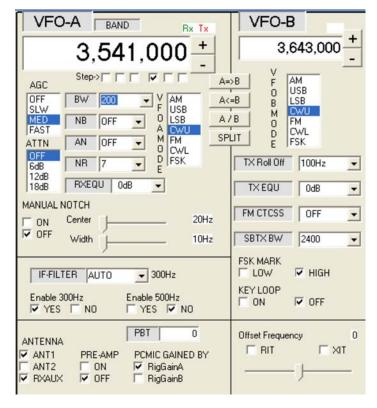
I hope to be able to demonstrate the radio's operation at a future club meeting from the Hospital meeting room where Internet access is available. You can then hear for yourself what it sounds like and how it works. As I said, it is probably acceptable to most operators for SSB work but not at all acceptable to me for my CW traffic work.

Now, let me describe what it is like to use the One-plug program to operate both voice and CW. The following figure shows how
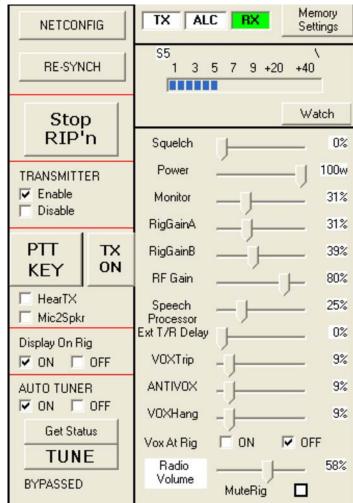
"busy" the One-plug interface is, sort of an eye-test, so subsequent figures will break it down into 3 sections for a brief description.

The leftmost section, shown next, is used for frequency, filter, and antenna control as well as setting up the voice bandwidth. The frequency can be entered directly, or the + and – buttons used to go up and down, with the step size set via the check box under the frequency control.
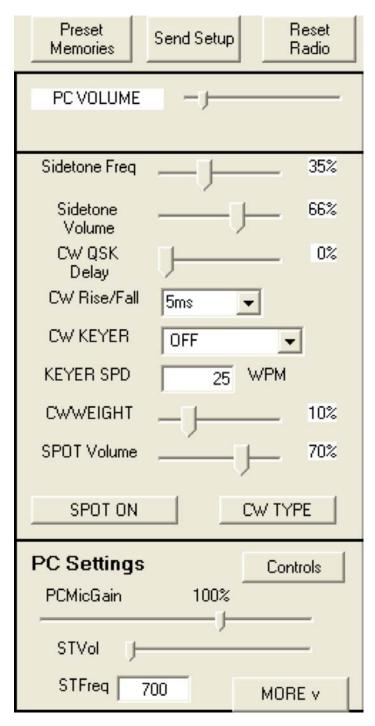

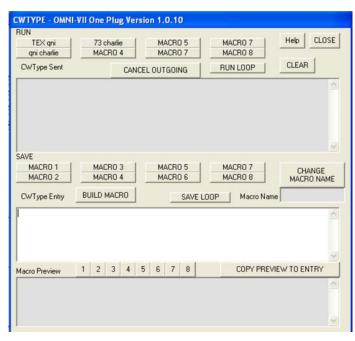The next section is shown in the following figure.

This has the S/SWR display meter and controls used primarily to set up the SSB VOX and speech processor values as well as control the RF gain and transmit power. It also has the Push-to-talk button, which stays down only when the mouse is clicked while the TX ON turns on the transmitter until clicked again. "RIP" refers to "Radio over IP", sending packets from the radio.

The last section, shown next, is used for CW control and the computer's audio gain control.

Operating CW requires the use of the internal keyer. If a key is plugged into the front panel, it does not work correctly, so one must remember to unplug the key before leaving. Operating CW requires the use of the "CW Type" window, shown next.

This technique requires a bit of getting used to. Macros are just text strings that may be stored and recalled for transmission. Manual send requires typing the text in the middle box. As it is sent, it will appear in the upper box. I noticed a pretty significant delay between what was typed in, what played on the sidetone, and what was actually transmitted. It is definitely NOT QSK in the sense that you can stop sending when someone interrupts you, since the radio buffers characters and the computer does too. One other quirk is that the CW Keyer speed could not be changed using the obvious control, nor could the sidetone frequency. They are fixed at whatever last set to on the radio. This is a problem that should be fixed (by Ten-Tec).

Ten-Tec also makes a USB interface box that allows plugging in a real key and provides other controls (such as a knob to change frequency). Based on what I experienced using the CW Type, it might be a lot less confusing, but probably would not be worth buying for my CW net use due to the delays involved.

Operating the radio on SSB is easy by comparison. I used an inexpensive USB microphone plugged into the computer. I received reports of very good audio, as long as I did not overdrive it by speaking too loudly or setting the gain too high. The speech compression works very well, raising the average transmit power significantly without seriously distorting the voice, providing an extra "punch" to get through noisy conditions. Just click the TX ON button and start talking, or hold the mouse button down on the screen's PTT button while talking. I found that I needed to pause a little after speaking the last syllable to wait for the data to get to the radio to be transmitted before letting up on the switch. Again, it takes a little getting used to.

For CW traffic handling, it is simply not suitable for passing record traffic. It is usable to check into a net and probably to send traffic, but receiving is flawed due to the packet drops. I have not used it enough to tell if transmit packets are getting dropped and what effect that might have, but I suspect it does occur as well, garbling what is sent on CW.

So the bottom line is that yes, it is possible to operate the radio remotely and enjoy casual QSOs on both SSB and CW, but the receive audio dropouts are quite annoying, even at less than 1% dropped packets. If I were designing the system, I would forego attempts to keep it "real time" (which it is not anyway) and provide an option to use TCP/IP for guaranteed packet delivery. Yes, there could be stutters and pauses due to network congestion, in which case UDP could be selected, but somehow I think it would work better most of the time.

Should the club attempt to set up this sort of system, either with an Omni 7 or with computer control of one of our other rigs? I believe for SSB use, the answer is yes. For CW, it probably will not work any better than the Omni does.

Events and Public Service Ops

29 January 2011—Collin County Skywarn And Hazardous Weather Conference. Collin County Community College Spring Creek Campus Conference Center, 2800 E. Spring Creek Parkway, Plano TX 75074
For information contact Collin.TX.ARES@gmail.com.
Pre-Registration is being offered : http://tinyurl.com/Collin-County-SKYWARN-2010.

19-20 February 2011—International DX Contest-CW. W/VE amateurs work as many amateur stations in as many DXCC countries of the world as possible on 160, 80, 40, 20, 15, and 10 meter bands. Foreign amateurs (also including KH6, KL7, CY9, and CYØ) work as many W/VE stations in as many of the 48 contiguous states and provinces as possible. Contest Period: 48 hours. Starts 0000 UTC Saturday; ends 2359 UTC Sunday.

5-6 March 2011—International DX Contest-Phone. Same rules as CW Contest above.

Sam Jobe W5TFH Ham Gear for Sale. Sam Jobe, W5TFH, has had some mini strokes and has had to be taken to Houston for tests. His family has decided the best thing for him is an assisted living home there in Houston, but he will be unable to operate his Amateur gear. It is necessary to sell his equipment to help with expenses and John, K5TIP has agreed to help. Below are the items for sale.

QTY	DESCRIPTION	PRICE
1	MFJ-203 Grid Dip Meter	$40.00
1	MFJ-945e Antenna Tuner	$80.00
1	LDG Z-100 Mobile Automatic Tuner 100W	$100.00
1	SWR & Pwr Meter ParaDynamics 2M/70CM	$15.00
1	SWR & Pwr Meter CN-101L HF-2m 10-1500W	$30.00
1	EF Johnson Low Pass Filter 1kW	$20.00
1	B&W Low Pass Filter TV-1000	$20.00
1	Alinco DJS-11 HT 2M	$45.00
1	Radio Shack HTX-404 70CM HT w/Spkr Mic, and Leather Case	$75.00
1	Diawa Antenna Switch 4-position	$25.00
1	Diawa Antenna Switch 2-position	$15.00
3	Radio Shack HT 2m Sold as is, lot of 3 for	$15.00

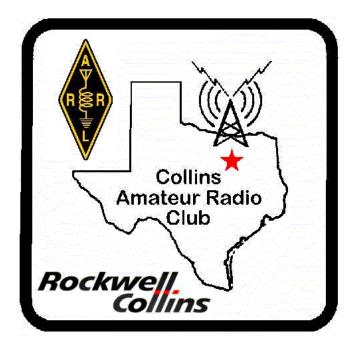Contact John at K5TIP2000@yahoo.com or (972) 562-2667.

Holiday Party Pictures *(Continued from page 1)*

Rockwell-Collins

Amateur Radio Club

Mail Station 461-290

P.O. Box 833807

Richardson, TX 75083-3807

TO:

CLUB STATIONS

(972) 705-1349

W5ROK   REPEATER

441.875 MHz   +5 MHz Input

131.8 Hz PL - RX and TX

W5ROK-1 PACKET BBS ROK Node

145.01 MHz

Thursday, 27 January 2011

1700 Social   1730 Meeting

**Methodist Richardson Medical Ctr
At Bush/Renner/Shiloh Intersection**

Second Floor Conference Room 200

NEXT SIGNALS DEADLINE:
➔➔➔ 13 February 2011 ⬅⬅⬅