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# SIGNALS

Rockwell Collins Amateur Radio Club

Monthly Newsletter of the

Volume 33 Issue 04

Web Site <http://www.w5rok.us>

January 2012

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## RCARC Membership Meeting

Thursday, 26 January 2012  
1700 Social      1730 Meeting  
1800 Program

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

*Subject:*  
**Understanding HF Propagation**  
**By Dave Jaksa WOVX**

The format provides club and local announcements of interest to Amateur Radio, a swap net time as well as personal updates from net participants regarding their experiences in the hobby. All suggestions for content and format are welcomed. *(Written by Michael Ketchum K5MDK)*

**Want to learn Morse Code?** The Dallas Amateur Radio Club "Morse Code on the Air" class for 2012 is about to start. The purpose of this class is to teach the art of Morse Code to hams interested in this form of communication. The DARC Morse Code on the Air will begin the evening of Jan. 9th at 7:15pm. Please have a pencil and paper and a 2 meter rig set to the 2m frequency. Participants will go from NO knowledge of Morse Code to 5 WPM by April. An optional test with "certificate of completion" and bragging rights for successful completion. Each class will be 45 minutes in length, 5 days a week (Monday through Friday) through April. We will have optional make up classes on Saturdays as required and requested.

This class is conducted "live" on the W5FC repeater in Dallas at 146.880MHz. If you are a licensed ham, you may check into the net directly. You do not need to be a member of the DARC, just have an interest in CW. You can also sign in via Echolink at W5FC-R and join RF participants in Q/A, read-back, and general comments. You can also "listen only" via the live stream via Windows Media Player at: <http://www.n5kd.com/webcast> or use the direct link at: <http://n5kd.shacknet.nu:8080> with VLC, iTunes, or other streaming audio client.

Archived audio copies from each class are available on archive.org, and the links are located in the "Links" section of the CWDallas Yahoo! Group.

To Join the CW Dallas Yahoo Group for more information and announcements, go to <http://groups.yahoo.com/group/CWDallas/join>.

Michael Ketchum, K5MDK says, "I have learned some CW from this course and I highly recommend it to anyone interested in learning CW." *(Submitted by Michael Ketchum K5MDK)*

## Local Club News

**Meeting Notice** Why is HF used for worldwide communications? It's the ionosphere! Come to the meeting Thursday and learn about the ionosphere, sunspots, solar cycles, MUFs, LUFs, convoluted propagation paths and much more.

**Rockwell Collins Amateur Radio Club Information Net Tuesday 24 January 2012** The W5ROK NET meets each month. The following are the particulars:

- WHAT** Information Net - **RCARCIN**
- WHEN** Tuesday prior to regular club meeting at 19:00 CST *(Note that this is a change)*
- WHERE** W5ROK Repeater 441.875+ PL 131.8Hz
- WHO** Everyone and anyone.
- FORMAT** (a) announcements  
(b) Swap  
(c) Check-in plus updates.

## RCARC OFFICERS

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## VE SESSIONS

**Dallas** tests are held 4<sup>th</sup> Sat of each month at 10:00. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD 972.917.6362

**Irving** tests are held 3<sup>rd</sup> Sat. of each month at 09:00. 5<sup>th</sup> 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 Janet Crenshaw, WB9ZPH, 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.

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

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## President's Message

Happy New Year to everyone! It is my wish that every one of you have a blessed year this 2012. I also hope your holiday was restful and filled with good times with family and friends.

We had announced a work party for the Christmas holiday, but due to the fact that the water was turned off to the facilities for plumbing repairs, we could not safely perform the work party. Furthermore, it was hoped that the space adjacent to the current club shack might be available for a shack expansion, so we cancelled the work day and held a shack orientation class instead. My thanks go to Bob Kirby – K3NT, for planning and teaching this class. There were three participants: Chris Havenridge – KF5GUN, Chris' son and John McFadden – K5TIP. The club will try to plan another work party to address some of our surplus material as we get things ready for a big sale.

The month of December also saw progress in the B-29 Bomber project as several of our club members have been actively involved installing a vintage ART-13/ATC radio system into the last flying Boeing B-29 Superfortress known as "FiFi", as operated by the Commemorative Air Force in Addison. Although our club no longer has a direct affiliation with this project, the project continues under the umbrella of the Commemorative Air Force, as club members involved have completed CAF membership and training in order to continue their work. This change in position from our club helps with several issues, including liability, coordination, scheduling and accountability during the project when participants are on the work site. I understand that there is a contingent of club members who are actively involved at the hanger just about every other Saturday, as they try to get everything ready before the flying season begins for "FiFi". Thanks again to Bob Kirby – K3NT, for continuing his work as Special Committee Chairman for this project.

Now that the holiday is over, I hope that everyone will continue to make QSOs and be active on their radios as much as possible. Due to the change in my employment status, it will be difficult for me to directly handle many different club functions, but I hope that some of you who are still employed at Rockwell Collins will step up and fill in the gaps as needed. I will rely upon many of you to help out with various tasks going forward for this fiscal year. Thanks to Mike Schmit – WA9WCC and Paul Veenstra – KC0TEG who attended the Executive Meeting at my home this week to discuss club plans going forward.

Thanks again,

73,  
Michael Ketchum  
K5MDK  
RCARC President

## Secretary's Report

17 November 2011

The meeting was called to order by Michael Ketchum, K5MDK, with the Pledge of Allegiance at 1733 CST, with introductions.

### Old Business:

*Station noise issues:* Our EMI problem stems from a mismatch between controller and motors. A 40 Hp motor is being controlled by a 20 Hp controller. Also RFI option and better system grounding required. A suggestion was made to use RC funding to get the air handler quiet.

*Field Day:* The results are in—we were fourth in a field of twenty-five.

*Repeater Power Backup:* A report about repeater backup power battery requirements is still pending. John, K5TIP made a suggestion for a battery source. John has agreed to follow up with his contact.

*Holiday Work Party:* The work party is scheduled for Tuesday Dec.27 at 9:00AM. The work will concentrate on the surplus inventory.

### New Business:

*RCARC Information Net:* Due to lack of participation in the RCARC Information Net it was decided to hold the net only once a month on Tuesday before the club meeting at 7:00 PM. The Information nets will commence in January.

*Activities Chair:* Paul Veenstra, KC0TEG, and Bob Kirby, K3NT, accepted nominations for Activity Chair. Paul was elected Activities Chair.

*Holiday Party:* Michael announced that the RCARC Holiday Party will take place at his home on Friday Dec.9.

*January Program:* The January meeting program is titled "UNDERSTANDING HF". The program will be presented by Dave Jaksa, W0VX.

*Upcoming events:* Jan.20—Cowntown Hamfest in FT.Worth.

The program was presented by Walt Mayfield, KE5SOO, Section Manager for ARRL North Texas Section.

**CAR TUNES—the story of the car radio** Radios are so much a part of the driving experience, it seems as though cars have always had them. But they didn't. Here's the story.

### Sundown

One evening in 1929 two young men named William Lear and Elmer Wavering drove their girlfriends to a lookout point high above the Mississippi River town of Quincy, Illinois, to watch the sunset. It was a romantic night to be

sure but one of the women observed that it would be even nicer if they could listen to music in the car.

Lear and Wavering liked the idea. Both men had tinkered with radios – Lear had served as a radio operator in the U. S. Navy during World War I – and it wasn't long before they were taking apart a home radio and trying to get it to work in a car. But it wasn't as easy as it sounds: automobiles have ignition switches, generators, spark plugs, and other electrical equipment that generate noisy static interference, making it nearly impossible to listen to the radio when the engine was running.

### Signing On

One by one, Lear and Wavering identified and eliminated each source of electrical interference. When they finally got their radio to work, they took it to a radio convention in Chicago. There they met Paul Galvin, owner of Galvin Manufacturing Corporation. He made a product called a "battery eliminator" a device that allowed battery-powered radios to run on household AC current. But as more homes were wired for electricity, more radio manufacturers made AC-powered radios. Galvin needed a new product to manufacture. When he met Lear and Wavering at the radio convention, he found it. He believed that mass-produced, affordable car radios had the potential to become a huge business.

Lear and Wavering set up shop in Galvin's factory, and when they perfected their first radio, they installed it in his Studebaker. Then Galvin went to a local banker to apply for a loan. Thinking it might sweeten the deal, he had his men install a radio in the banker's Packard. Good idea, but it didn't work – half an hour after the installation, the banker's Packard caught on fire. (They didn't get the loan.)

Galvin didn't give up. He drove his Studebaker nearly eight hundred miles to Atlantic City to show off the radio at the 1930 Radio Manufacturers Association convention. Too broke to afford a booth, he parked the car outside the convention hall and cranked up the radio so that passing conventioners could hear it. That idea worked – he got enough orders to put the radio into production.

### What's In A Name

That first production model was called the 5T71. Galvin decided he needed to come up with something a little catchier. In those days many companies in the phonograph and radio businesses used the suffix "ola" for their names – Radiola, Columbiola and Victrola were three of the biggest. Galvin decided to do the same thing, and since his radio was intended for use in a motor vehicle, he decided to call it the Motorola.

But even with the name change, the radio still had problems:

When Motorola went on sale in 1930, it cost about \$110 uninstalled, at a time when you could buy a brand-new car for \$650 and the country was sliding into the Great Depression. (By that measure, a radio for a new car would cost about \$3,000 today.)

In 1930 it took two men several days to put in a car radio – the dashboard had to be taken apart so that the receiver and a single speaker could be installed, and the ceiling had to be cut open to install the antenna. These early radios ran on their own batteries, not on the car battery, so holes had to be cut into the floorboard to accommodate them. The installation manual had eight complete diagrams and twenty-eight pages of instructions.

### ***Hit The Road***

Selling complicated car radios that cost twenty percent of the price of a brand-new car wouldn't have been easy in the best of times, let alone during the Great Depression – Galvin lost money in 1930 and struggled for a couple of years after that. But things picked up in 1933 when Ford began offering Motorolas pre-installed at the factory. In 1934 they got another boost when Galvin struck a deal with B. F. Goodrich tire company to sell and install them in its chain of tire stores. By then the price of the radio, installation included, had dropped to \$55. The Motorola car radio was off and running. (The name of the company would be officially changed from Galvin Manufacturing to “Motorola” in 1947.)

In the meantime, Galvin continued to develop new uses for car radios. In 1936, the same year that it introduced push-button tuning, it also introduced the Motorola Police Cruiser, a standard car radio that was factory preset to a single frequency to pick up police broadcasts. In 1940 he developed with the first handheld two-way radio – the Handie-Talkie – for the U. S. Army.

A lot of the communications technologies that we take for granted today were born in Motorola labs in the years that followed World War II. In 1947 they came out with the first television to sell under \$200. In 1956 the company introduced the world's first pager; in 1969 it supplied the radio and television equipment that was used to televise Neil Armstrong's first steps on the Moon. In 1973 it invented the world's first handheld cellular phone. Today Motorola is one of the second-largest cell phone manufacturer in the world. And it all started with the car radio.

### ***Whatever Happened To...***

The two men who installed the first radio in Paul Galvin's car, Elmer Wavering and William Lear, ended up taking very different paths in life. Wavering stayed with Motorola. In the 1950's he helped change the automobile experience again when he developed the first automotive alternator, replacing inefficient and unreliable generators. The invention led to such luxuries as power windows, power seats, and, eventually, air-conditioning.

Lear also continued inventing. He holds more than one hundred and fifty patents. Remember eight-track tape players? Lear invented that. But what he's really famous for are his contributions to the field of aviation. He invented radio direction finders for planes, aided in the invention of the autopilot, designed the first fully automatic aircraft landing system, and in 1963 introduced his most famous invention of all, the Lear Jet, the world's first mass-produced, affordable business jet. (Not bad for a guy who dropped out of school after the eighth grade.)

*(This article was provided by Steve Philips K6JT, who received it from George Bobo, K5BMR)*

## **FCC Releases New Rules for 60 Meters**

11/21/2011

On November 18, the FCC released a *Report and Order* ([R&O](#)), defining new rules for the 60 meter (5 MHz) band. These rules are in response to a *Petition for Rulemaking* ([PRM](#)) filed by the ARRL more than five years ago and a June 2010 *Notice of Proposed Rulemaking* ([NPRM](#)). In the *R&O*, the FCC replaced one of the channels in the band, increased the maximum authorized power amateur stations may transmit in this band and authorized amateur stations to transmit three additional emission designators in the five channels in the 5330.6-5406.4 kHz band (60 meters).

The Amateur Radio Service in the United States has a secondary allocation on 60 meters. Only those amateurs who hold General, Advanced or Amateur Extra class licenses may operate on this band. Amateur stations must not cause harmful interference to -- and must accept interference from -- stations authorized by any administration in the fixed service, as well as mobile (except aeronautical mobile) stations authorized by the administrations of other countries.

Here is a summary of the changes. Please note that these changes have not yet taken effect. These new rules will take effect **30 days after they are published in the *Federal Register***. The ARRL will announce on its website when the rules are published.

- The frequency 5368.0 kHz (carrier frequency 5366.5 kHz) is withdrawn and a new frequency of 5358.5 kHz (carrier frequency 5357.0 kHz) is authorized.
- The effective radiated power limit in the 60 meter band is raised by 3 dB, from 50 W PEP to 100 W PEP, relative to a half-wave dipole. If another type of antenna is used, the station licensee must maintain a record of either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain.
- Three additional emission types are authorized. **Data** (emission designator 2K80J2D, for example, PACTOR-III), **RTTY** (emission designator 60H0J2B, for example, PSK31) and **CW** (150HA1A, i.e. Morse telegraphy by means of on-off keying). For CW, the carrier frequency must be



set to the center frequency. For data and RTTY the requirement to transmit “only on the five center frequencies specified” may be met by using the same practice as on USB, i.e. by setting the suppressed carrier frequency of the USB transmitter used to generate the J2D or J2B emission to the carrier frequency that is 1.5 kHz below the center frequency.

Automatic control on data and RTTY is not permitted; a control operator must be in a position to exercise either local or remote control over the transmitter. The FCC noted that “amateur operators must exercise care to limit the length of transmissions so as to avoid causing harmful interference to Federal stations.” This is a very important caveat: If a Federal station requires amateurs to cease using a frequency, the amateur station must be able to do so without delay.

A reasonable person might wonder what the difference is between data and RTTY. According to former ARRL Chief Technology Officer Paul Rinaldo, W4RI, there used to be a difference, but there’s not much of one today. “Years ago, a B designator (telegraphy for automatic reception [i.e. narrow-band direct-printing telegraphy emissions]) meant decoding and display on a teletypewriter (TTY) or other mechanical machine,” he explained. “A D designator signified transmission of data, telemetry or telecommand intended for data processing or just storage for possible future use. When computers or computer-like devices were introduced to emulate RTTY transmission and/or reception, the line between telegraphy and data transmission blurred to the point of little or no practical distinction.”

PACTOR-III and PSK31 are cited in the new rules as examples of data and RTTY emissions, respectively, that will be authorized; however, in paragraph 28 of the R&O, the Commission states that amateur stations will be permitted to use “any unspecified digital code, subject to the requirements of Section 97.309(b).” Therefore, as a practical matter it appears that any J2D data emission is to be permitted up to a bandwidth of 2.8 kHz, provided that care is exercised to limit the length of transmissions.

### Amateur Radio and the 60 Meter Band

The 60 meter band is part of the larger 5.060-5.450 MHz band, which is a federal/non-federal shared band that is allocated to the fixed service on a primary basis and to the mobile (except aeronautical mobile service) on a secondary basis. The 5.060-5.450 MHz band is primarily used by federal agencies for ship-to-shore and fixed point-to-point communications. Non-federal use of the 5060-5450 kHz band includes state government licensees and licensees in the Industrial/Business Pool that operate standby and/or backup communication circuits for use during emergency and/or disaster situations, entities prospecting for petroleum and natural gas or distributing electric power, coast stations and aeronautical fixed stations.

The Commission added the Amateur Radio Service as a secondary allocation after determining that such frequencies could be useful to the Amateur Radio community for completing disaster communications links at times when existing frequencies in the 3.500-4.000 MHz (80 and 75 meter) and 7.000-7.300 MHz (40 meter) bands are not available due to ionospheric conditions. It concluded that such an allocation represented the best compromise available to give the amateur service access to new spectrum while assuring the federal government agencies that their use is protected.

At the request of the National Telecommunications and Information Administration (NTIA), the Commission restricted amateur stations operating on the five channels in the 60 meter band to upper sideband (USB) voice transmissions (phone emission 2K80J3E), and to a maximum effective radiated power (ERP) of 50 W peak envelope power (PEP). The Commission adopted these operating restrictions to decrease the interference potential between amateur stations and federal stations.

In October 2006, the ARRL filed a *Petition for Rulemaking* with the FCC, requesting that the Commission amend Parts 2 and 97 of its Rules to replace one of the allocated center frequencies (5368 kHz) with a less encumbered frequency (5358.5 kHz), to increase the maximum ERP from 50 to 100 W PEP and to authorize the use of additional emissions types, limited to emission designators 150HA1A, 60H0J2B and 2K80J2D. In its *Petition*, the ARRL pointed out that its proposals were designed to facilitate more efficient and effective use of the secondary Amateur Radio Service allocation in the 60 meter band. As part of its petition, the ARRL attached a letter from NTIA, indicating that it would “look favorably” on the ARRL’s proposed modifications. (*Reprinted courtesy <http://www.arrl.org>*)

**Online Calculators** Looking for a little help with conversions? The links below will take you to a resistor color codes calculator and a units converter (including furlongs). (*Contributed by Doug Kilgore KD5OUG and Warren Curry WA9KZY, respectively*)

<http://www.electronics2000.co.uk/calc/resistor-code-calculator.php>

<http://joshmadison.com/convert-for-windows/>

### Monday Ham Lunch in Plano

**WHEN:** Each Monday at 11:30 AM.

**WHERE:** El Fenix in Plano on the north bound service road of US 75 just a few hundred feet north of Plano Parkway.

**WHO:** Lots of new and long time hams from the DFW area. Sometimes visitors from other call districts

We sit at a large table in a back room that is better for those arriving at different times. We normally stay from 11:30 AM until 1:00 PM or later, so if you can’t get there at 11:30 you can arrive late and we will still be there.

# Rockwell-Collins

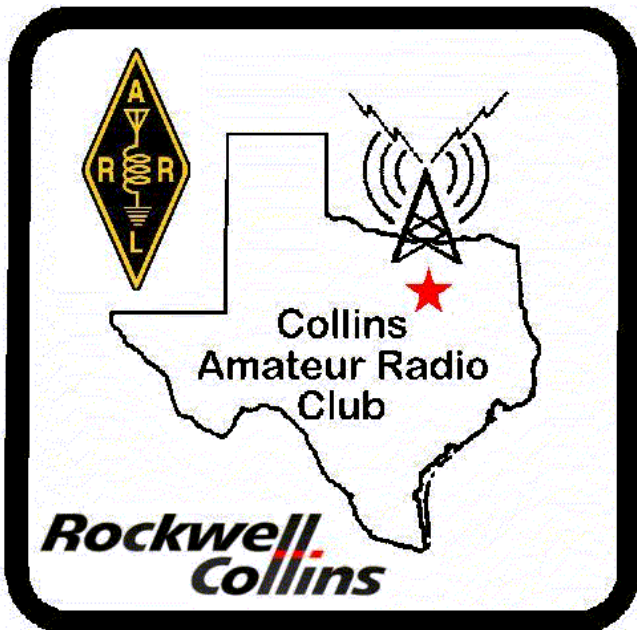
Amateur Radio Club

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

W5ROK-N1, W5ROK-N2 & W5ROK-N3 HSMM-MESHNET Nodes 2.4 GHz

Thursday, 26 January 2012

1700 Social

1730 Meeting

Methodist Richardson Medical Ctr  
At Bush/Renner/Shiloh Intersection

*Second Floor Conference Room 200*

### NEXT SIGNALS INPUTS DEADLINE:

**→→→ 12 February 2012 ←←←**