
SIGNALS

Rockwell Collins Amateur Radio Club

Monthly Newsletter of the

Volume 34 Issue 07

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

April 2013

RCARC Membership Meeting

Tuesday 23 April 2013
1700 Social 1730 Meeting
1800 Program

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

Subject:

" Solar Superstorms and Impact on the
Ionosphere
by Bill Swan, K5MWC

teers: Mike Schmit WA9WCC and Michael Ketchum K5MDK. The Medical Reserve Corps is a volunteer group of the Citizen's Corps, under the administration of the Department of Homeland Security. The MRC is designed to promote citizen involvement in disasters or emergencies that require medical points of distribution. MRC volunteers, made up of doctors, nurses and non-medical personnel, would run and operate these points of distribution, or PODs, in order to provide emergency medical supplies to people in a disaster-stricken area. For Collin County, each high school would be a possible POD site. The MRC volunteers are trained for biohazard, radiological and pandemic emergencies as well as how to setup and operate a POD. Training is provided by the MRC directly as well as through FEMA (Federal Emergency Management Administration) and other qualified sources. Ham Radio operators also made up some of the volunteers for the MRC, providing their communication skills in keeping the POD connected to the Emergency Operations Center (EOC), where county officials will be stationed during an emergency situation.

Today's focus group recognized five specific areas where discussion for improvement is needed: (1) Recruitment, (2) Advertisement, (3) Junior MRC to involve youth volunteers into the organization for simple tasks, (4) Education and how MRC volunteers can get more training resources, and (5) Radio communications, specifically the maintenance and upkeep of the PCUs (PODS communications units). After assignment of leaders for each focus group, the five groups split up to talk about improvements.

Collin County has many PCUs, which are made up of a complete VHF/UHF rig, TNC, power supply, cables, and antenna with mast and accessories. However, the programming of the radios has not kept up with changes in local North Texas repeaters. Along with programming, the equipment needs to be looked after and improvements made. In addition to PCU maintenance efforts, concerns about communication among the MRC radio operator volunteers were brought up in order to spread the work of PCU upkeep. In the past, the responsible person threw together informal times to work on the equipment along with anyone they happen to grab along the way. We agreed to formalize (Continued on page 3)

Local Club News Meeting Notice

Sounds like another great program this month, considering where we are in the solar cycle! The program will be presented by our own Bill Swan, K5MWC. Bill has not disclosed the details of his presentation, but the subject is very appropriate considering where we are in the current cycle. We aren't expecting a repeat of 1859, when campers in the Rocky Mountains, mistaking the aurora resulting from the sunspot activity for sunrise, got up and started cooking breakfast. You don't want to miss this meeting!

Collin County Medical Reserve Corps Focus Group Studies Improvements

Saturday, March 3, 2013 McKinney, TX

The Collin County Medical Reserve Corps met today in a focus group in order to connect with volunteers to see what areas of improvement the Collin County MRC needs to look at. Two members of the Rockwell Collins Amateur Radio Club attended this focus session as MRC volun-

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VE SESSIONS

Dallas tests are held 4th Sat of each month at 1000 hrs. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD 972.917.6362

Irving tests are held 3rd Sat 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 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.

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 Dave Russell W2DMR, at 972.690.9894 or E-mail warhog4@tx,rr.com.

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President's Message

May has several important public service events that need amateur radio assistance. May 4 and May 5 are the dates for the MS 150 Bicycle Tour. This two-day event is an excellent opportunity to practice emergency communication skills in a (hopefully) non emergency event. For information go to: <http://sites.google.com/site/dfwmsridecomms/>.

On May 18 we have the Richardson Wild Ride bicycle tour. This event is sponsored by Methodist Richardson, which generously gives us a fine place to hold our business meetings. Let's have the RCARC generously represented as volunteers.

For information contact Doug Kilgore (KD5OUG) at kd5oug@arrl.net.

Finally let's congratulate Joe Wolf N5UIC on his impending retirement. I believe I convey the hopes of all RCARC members as I wish Joe a long, happy and healthy retirement.

73,
Michael Schmit
WA9WCC
RCARC President

Secretary's Report

26 March 2013

The meeting was called to order by President Mike Schmit WA9WCC at 1735.

The following members were present at the meeting:

Charlie Beis	K5UWD
Rod Blocksome	K0DAS
Jim Brown	TBA
Bob Coulbourne	W4FTD
Loney Duncan	W0GZV
Hernando Garcia	KC5FDW
Dwayne Harris	AF5BJ
Wayne Hughes	WA0TGH
Dave Jaksa	W0VX
Michael Ketchum	K5MDK
Bob Kirby	K3NT

Bryan McCoy	KA0YSQ
Cindy McCoy	N0KXF
John McFadden	K5TIP
Steve Phillips	K6JT
Mike Schmit	WA9WCC
Jim Skinner	WB0UNI
Bill Swan	K5MWC
Paul Veenstra	KC0TEG
Joe Wolf	N5UIC

Officers and Committee Reports:

President's Report: There was no formal President's Report.

Vice-President's Report: We currently have no Vice-President.

Secretary's Report: The Secretary's Report is in this newsletter.

Treasurer's Report: There was no Treasurer's Report.

Website Manager's Report: There was no Website Manager's Report.

Station Trustee's Report: There was no Station Trustee's Report.

Database Manager's Report: There was no Database Manager's Report.

Old Business:

President Mike Schmit WA9WCC asked whether any of the purchases authorized at the last meeting have been completed. Bob Kirby K3NT advised that all was in process.

New Business:

Mike Schmit announced that the Dallas MS 150 Bike Tour is scheduled for the first week in May and the Richardson Wild Ride is also scheduled for May. Both can use club support and would be considered public service events. The contact for the Richardson Wild Ride is Doug Kilgore KD5OUG.

Hernando Garcia KC5FDW offered a clock to the club for use as appropriate, possibly as a future door prize. The clock was accepted by President Mike Schmit.

Adjournment:

John McFadden K5TIP moved for adjournment at 1744; Bob Kirby seconded the motion. The meeting was adjourned at 1744 and followed with a presentation by Rod Blocksom K0DAS on "HF Communications with FIF1 - The Only Flying B-29."

Collin County Medical Reserve Corps Focus Group Studies Improvements (Continued from page 1) the work efforts in order to allow everyone an opportunity to help and become more familiar with the equipment.

As a result of the focus group meeting today, two radio rehab sessions have been planned, one in March and one in April. These radio rehab sessions will address the maintenance

and programming needs of the PCUs. Mike Schmit WA9WCC and Michael Ketchum K5MDK have both signed up for one or both of the work days and are looking forward to getting together to play radios once again. (Contributed by Michael Ketchum, K5MDK)

Events and Public Service Ops**HamEXPO**

Start Date: 04/20/2013

End Date: 04/20/2013

Location: Bell County Expo Center

301 East Loop 121

Belton, TX 76513

Website: <http://www.beltonhamexpo.org>.

Sponsor: Temple Amateur Radio Club

Type: ARRL Hamfest

Talk-In: 146.820 (PL 123.0)

Public Contact: Mike LeFan, WA5EQQ

1802 South 13th Street Temple, TX 76504

Phone: 254-773-3590

The WildRide! Bike Rally and WildRun! 5K Run/Walk

will be held on Saturday, May 18, 2013. Benefiting the Methodist Richardson Cancer Center, this popular event expects more than 2300 participants this year. Radio operators are needed for communications along the 65 mile route from Richardson to Josephine, TX and back. Information about the rally can be found at: <http://wildridebikerally.com>

Voice operations will be on VHF, and digital messages will be passed on UHF using NBEMS. There are four rest stops. Each will have a voice operator and a digital operator. Due to the distance covered, higher-powered mobile rigs, not HTs, are required for coverage.

Hams with vehicles which can carry riders and bikes are needed for SAG vehicles. APRS trackers are needed for all SAG and supply vehicles.

The digital operators need a UHF radio, a laptop computer and a soundcard interface for use with NBEMS.

Please volunteer by filling out the online form at: <http://tinyurl.com/WildRide-13> or contact Doug Kilgore KD5OUG at kd5oug@arrl.net or Ph 972-231-8539

West Gulf Division Convention - 35th Anniversary (Ham-Com)

Start Date: 06/07/2013

End Date: 06/08/2013

Location: Plano Centre 2000 East Spring Creek Parkway
Plano, TX 75023

Website: <http://www.hamcom.org>

Sponsor: Ham-Com, Inc.

Type: ARRL Convention

Talk-In: 147.18 (PL 107.2) WD5ERD Plano ARCI

Public Contact: Bill Nelson, AB5QZ 1915 Centenary Drive Richardson, TX 75081

Phone: 469-964-2814 Email: ab5qz@swbell.net

The Not-Quite-Prepared-Enough Emergency Preparedness Field Day

By Jennifer Magers N5OJR

Saturday, June 22, 1991 will probably go down in MARC history as the first, possibly most memorable of Field Days. Everything was planned meticulously, equipment, location, permits, operating schedules, food, work parties—even a bug-spraying crew—everything, that is, except weather contingency plans. After all, June is always hot and dry in Texas and anyway, it wouldn't dare rain on our first Field Day. So the morning dawned and Gil and his group got to work and pretty soon had erected a dipole, a sloper and a vertical; set up the two generators, erected canopies over the three operating stations and had everything humming, such that transmissions began to bang-on-time at 1:00pm.

Luke, KJ5U and Mac, N5TII, operated CW, whilst several other members made voice contacts, as all the food started arriving. Everybody turned up with something to pad out the already full tables, courtesy of Jack's, N5TGV, company, who worried that the night crew might suffer from midnight malnutrition, and provided several coolers of food and drink to ensure that they could keep pounding away on those keys.

And then slowly but surely, the gray clouds got darker and heavier, but waited until the cooking had started before proceeding to dilute everyone's drinks and potato salad with a steady downpour. Few were deterred though. Bonnie, N5IMN, had fashioned herself a very fetching rain hat out of a Kroger grocery bag; several members tried to beat the world record for the number of people able to congregate in close proximity (very close) under the canopies, whilst eating their hamburgers, onions and all, and everyone else just stoically kept eating and dripping, being quite convinced that any minute it would stop because it wouldn't DARE rain for long on our first Field Day.

Well about that time the lightning started and the rain became sufficient to swamp any amphibious creature that got in its path, folks started to run away, until only the few remained. Dan, N5MRG, had the presence of mind to realize that the possible publicity from passers-by noticing the very visible club banner giving a name to the group of lunatics sheltering under the trees near a large body of water and surrounded by antennas was not the sort of publicity the club was after, so he valiantly rushed out and took it down and almost got blown into the lake with it, so strong had the wind become.

Finally, the Gallant Few decided it was now too wet, too cold and too muddy to continue, at which point mother nature showed her agreement by blowing the CW canopy straight off its stand and into the lake. "I'll go get it," said Jack, whose brain must have become severely waterlogged at this point. And in he went. Up to the waist. After all, he couldn't get any wetter.

Just about the time he emerged clutching the canopy,

someone stood on his brand new Stetson that he'd only worn twice and had cost a fortune, and [that he] had placed under the tarp for safety.....now all that remained was to get the vertical down. Simple enough, just rotate the mast around and around until there was a big enough hole to be able to just lift it out. And therein was learned lesson number two (lesson one being to purchase a tent).

Always assign one person to watch the top of an antenna if everyone else is going to stare at the bottom. Too late this time. Everybody gazed fearfully upwards. And sure enough, the antenna had suddenly decreased by at least four feet in length. The 80-meter resonator was nowhere to be seen. Must have disappeared right about the time the big fish jumped.....They all looked at Jack.

After all, he couldn't get any wetter. Back in he went, but with no success this time. It's difficult to concentrate when standing in a large body of water with lightning all around. So Sunday 23rd. instead of talking, we were fishing. Everyone was back out there with poles and rakes, and gadgets of all kinds. The bottom of the lake has never been so clean.

And then finally, all those years of fishing the bottom for catfish paid off, and Dan reeled it in. to tumultuous cheers from the Gallant Few, and very puzzled stares from the remaining populous. But we were happy—everything was back as it was and we wouldn't have to try to persuade John that his vertical had been vaporized in one of those antenna-vaporizing lightning strikes that happen so frequently. And now we could go home and start planning for next year. Maybe a tent would be useful after all, even though it hardly ever rains in June.

And everyone knew they'd learned a special lesson. It takes a treble hook and a Zebco reel to rescue an 80-meter resonator from a lake. *(Contributed by John McFadden K5TIP)*

Vortex Radio Waves Could Boost Wireless Capacity "Infinitely"

By Sebastian Anthony



After four years of incredulity and not-so-gentle mocking, Bo Thide of the Swedish Institute of Space Physics and a team in Italy have finally proven that it's possible to simul-

taneously transmit multiple radio channels over exactly the same wireless frequency. In theory, according to Thide, we could potentially transmit an “infinite number” of TV, radio, WiFi, and cellular channels at the same time over the same frequency, blasting apart our highly congested wireless spectrum.

Thide’s approach is rather simple. Basically, electromagnetic waves can have both spin angular and orbital angular momentum (OAM). If you picture the Earth-Sun system, spin momentum is the Earth rotating on its axis (producing the day-night cycle), and orbital momentum is the Earth rotating around the sun (producing the seasons). In standard wireless communications — radio, TV, WiFi — we only modulate the spin angular momentum of waves. For years, Thide had theorized that orbital angular momentum could also be added to wireless signals, effectively creating a spiral signal that looks like fusilli pasta; or, in the words of Thide, a “radio vortex.”



Now, in an experiment in Venice, Thide and his Italian colleagues have transmitted two signals at the same time, on the same frequency, over a distance of 442 meters (1450ft). Pictured on the right is the antenna that the team used. No, your eyes don’t deceive you: To create these radio vortices, all you have to do is make a cut in a standard

parabolic reflector and twist it slightly. If you imagine a corkscrew of radio signals being continuously transmitted from the outside edge of the antenna, that’s effectively what’s occurring. On the receiving end, there are two “normal” TV antennae (Yagi-Uda) set apart by the same angle as the break in the transmitter. These antennae “decode” the vortex, and voila: Two radio signals transmitted over the same frequency.

It is hard to put into words just how significant Thide’s discovery could be. If the vortex preserves other aspects of wireless communications, such as multiplexing, then in the short term we could be looking at a wireless spectrum that can carry 10 or 20 times as much data. In the long term, as our understanding of orbital angular momentum grows, our wireless spectrum could effectively be infinite. To be honest, this is such a huge twist for wireless communications that the full repercussions are not yet known.

With radio and TV, and now cellular networks, wireless spectrum is one of humanity’s most valued resources. It is because airwaves are so clogged that companies like Verizon or Vodafone pay billions of dollars for just a few megahertz. If Thide’s discovery pans out, not only would wireless spectrum lose most of its value, but the trouble and strife surrounding [LightSquared](#), international roaming, [LTE rollout](#), white space wireless, and digital TV simply cease to be. (From <http://www.extremetech.com>)

(Editor’s note: I have been waiting for months for the right time to reprint this article. Feedback is welcomed!?)

Solar Storms

On Thursday, September 1, 1859, a 33-year-old brewer and amateur astronomer named Richard Carrington climbed the stairs to his private observatory near London, opened the dome slit, and as was his habit on a sunny morning, adjusted his telescope to project an 11-inch image of the sun onto a screen. He was tracing sunspots on a piece of paper when, before his eyes, “two patches of intensely bright and white light” suddenly appeared amid one large sunspot group. At the same time the magnetometer needle dangling from a silk thread at London’s Kew Observatory began dancing wildly. Before dawn the next day enormous auroral displays of red, green, and purple illuminated the skies as far south as Hawaii and Panama.

The flare Carrington had observed heralded a solar superstorm—an enormous electromagnetic outburst that sent billions of tons of charged particles hurtling toward Earth. When the invisible wave collided with the planet’s magnetic field, it caused electrical currents to surge through telegraph lines. The blast knocked out service at several stations, but telegraphers elsewhere found that they could disconnect their batteries and resume operations using the geomagnetic electricity alone. “We are working with the current from the Aurora Borealis alone,” a Boston telegrapher messaged an operator in Portland, Maine. “How do you receive my writing?”

“Much better than with the batteries on,” Portland replied.

Operators of today’s communication systems and power grids would be less sanguine. No solar superstorm as powerful as the 1859 event has occurred since, so it is difficult to calculate what impact a comparable storm might have on today’s more wired world. A hint came with the Quebec blackout of March 13, 1989, when a solar storm roughly a third less powerful than the Carrington event knocked out the power grid serving more than six million customers in less than two minutes’ time. A Carrington-class storm could fry more transformers than the power companies keep stockpiled, leaving millions without light, potable water, sewage treatment, heating, air-conditioning, fuel, telephone service, or perishable food and medications during the months it would take to manufacture and install new transformers (*Excerpts from* <http://ngm.national-geographic.com/2012/06/solar-storms/ferris-text>)

Rockwell-Collins

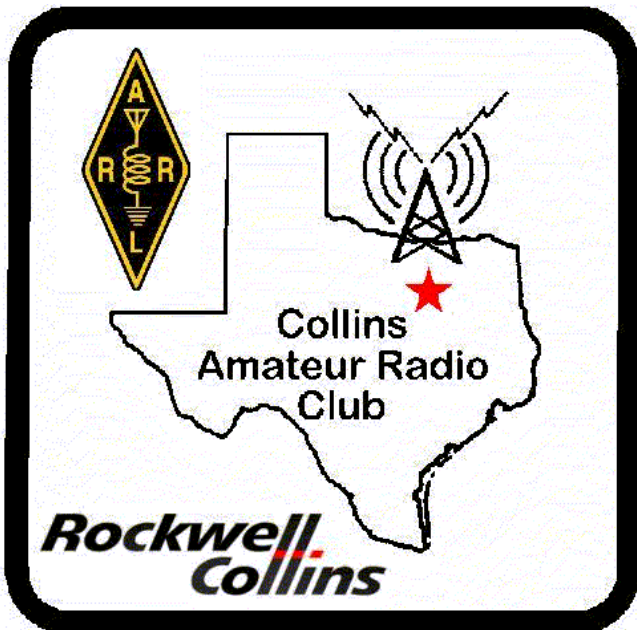
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TO:



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

145.05 MHz

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

Tuesday 23 April 2013

1700 Social

1730 Meeting

Methodist Richardson Medical Ctr
At Bush/Renner/Shiloh Intersection

Second Floor Conference Room 200

NEXT SIGNALS INPUTS DEADLINE:

→→→ 17 May 2013 ←←←