The Static

An evolving publication of the Hill Country Amateur Radio Club

Best wishes for a Happy Holiday Season. This includes

Merry Christmas

HAPPY CHANUKAH

Happy New Year

…and now a word from the outgoing prez…

Dear HCARC Members,

I thank you for the opportunity to serve HCARC as secretary for several years and then as president for these past few years. Since I am not technical, these two areas were places where I could be of service to the club without an abundance of technical skills. Of course, many of you, and especially Harvey, K5HV, have helped me through the technical highway. All help was greatly appreciated.

It has been fun to play the ticket game at meetings and tease those who are so willing to be the brunt of poking fun. I hope in some way this journey has been a fun experience for you as well.

I am very appreciative of the gifts you have given to me. The "trophy" gives a new meaning to "trophy". It is truly a beautiful work of art and is an item I will certainly treasure for years to come. The "Ham Radio for Dummies" publication will serve me well when I have questions. I thank you so very much for these items and especially for your support and friendship.

I wish the new slate of officers the best as they lead the club during 2013. I will sit in the wings and admire the knowledge that so many of you share and enjoy. It amazes me as to the collective knowledge that is so strong in HCARC. Your willingness to help others is a real plus for everyone.

Thanks a bunch for the fun times and your willingness to support me as I served the club. Your interest and skills associated with ham radio will continue to serve all of us and others in the years to come.

73,

Marilyn Vordenbaum

KE5DDR

and another from the incoming prez…

I was involved in a public service event responding to an emergency when I received a call asking if I would mind throwing my hat into the ring for President of this club. I was busy with the emergency and without thinking said “sure”. It would appear no one else is missing a hat.

By way of introduction, my name is Terry and Linda is my XYL of 44 years. We have five children and seven grand children. I am currently retired (I was tired yesterday and am tired again today). Previously I had spent 22 years as a Laser Engineer for Hughes, Raytheon, and HE Microwave where we made Radar for the military and then Delphi where we made Radar for cars. Prior to that I spent 24 years in Military Intelligence and retired as Command Sergeant Major. The majority of my military service was spent in Electronic Warfare which, many years later, led to my interest in Amateur Radio.

I have been licensed for only a year, but with the help of some great Elmers in the club, I have been able to begin having fun with my antiquated HF rig. There are many facets in the Ham arena and I enjoy learning of these from our members as they relate their experiences and offer advice and help to us newbies.

Marilyn has done a great job in making this club what it is today. I owe her a great deal of gratitude for the condition she left it for me. I am asking for your help in keeping this a great club. I need your input – what are your interests and what are your ideas for this club in the coming year? This is your club – what is your vision?

As for my vision – The Red Cross has graciously offered us a club house and has only asked for support in time of need. The local chapter doesn’t really know how to use us during this time of need and we don’t know what to expect either (what is our role, where do we go, what equipment do we need, is there power, etc...). As a Red Cross Disaster Services Technology member, I would like to see semi-annual emergency exercises with the Red Cross.

I look forward to seeing what next year has in store for us. See you in January.

Merry Christmas and a Happy New Year to you and your XYL!

73

Terry L Hipskind

KF5NHK

Some folks like challenges in their lives and if you are one of them like here is a chance to learn Morse Code or brush up on rusty skills

Dale Gaudier writes “I've had several club members express an interest in learning Morse code, or brushing up on their rusty CW skills.

If you have such an interest, please email me privately at k4dg@arrl.net and I'll put you on my list. If I receive enough interest, we can conduct some training sessions to help our members gain or improve their proficiency in his mode of communication.”

Thanks to **Dale Gaudier** for providing this opportunity.

It seems like no issue of The Static would be complete without some article about antennas. The following article is from Dan, KB6NU.

I've always been interested in end-fed, half-wave antennas before, but until this recently, I'd never built one. One of the reasons for this is that most designs are for QRP antennas and not made to handle more than 5 – 10 W of power.

A couple of months ago, though, I ran across a design rated at 100 W (http://earchi.org/proj_homebrew.html). The design seemed relatively simple to build, requiring only a single toroid and a capacitor made with a short length of RG-174 coax. Well, it just so happens that I bought 100-ft. of RG-174 at Dayton this year, and I found the toroid cores online from the "Toroid King" for a very reasonable price, so I decided it was high time to build one.

All told, the parts cost about $10, the biggest part of that being a 4-in. x 4-in. x 2-in. plastic junction box (Carlon E989NNJ-CAR) I got from Lowe's for $6.41. Compare that with the $60 that LNR wants for their end-fed antenna.

I put up the antenna about three weeks ago, on a beautiful fall Sunday, running 34 feet of wire up a trellis attached to a small deck in my backyard, then out to a tree near the back of my lot. With more than a little anticipation, I put the antenna analyzer on it, only to be somewhat disappointed with the readings. The SWR was 2.6:1 at 14.000 MHz, dropping to about 1.5:1 at 14.900 MHz.

Since the internal tuner on my IC-746PRO is supposed to be good to 3:1, I did use it and made a couple of contacts. A guy in MA even gave me a 599 signal report. So, while I was a little uncomfortable with an SWR so close to the limit of my tuner, it did seem to radiate pretty well.

I e-mailed the guy who published the design and asked why he thought the resonant frequency was so high, and he said that all I had to do was add a couple feet of wire to the antenna. I also did some more reading about end-feds and several websites suggested that adding a counterpoise might be a good idea, too.

A week later, I finally got back to playing with the antenna. I added 24-in. of wire to it, and it did indeed bring down the SWR of the antenna to below 2:1 in the CW portion of 20m. I'm happier with this. I made a couple of contacts that day, too, with both stations giving me good reports.

I still do plan to try a counterpoise. Not so much to improve the SWR, but to see if it makes the antenna a little more efficient.

Overall, this has been a fun project. I learned something about end-fed, half-wave antennas and saved a bunch of money by rolling my own. Isn't that what ham radio is all about?

Technology never rests.

New Method of Manufacturing Smallest Structures in Electronics: Discovery Could Revolutionize Semiconductors

ScienceDaily (Nov. 28, 2012) — A completely new method of manufacturing the smallest structures in electronics could make their manufacture thousands of times quicker, allowing for cheaper semiconductors. The findings have been published in the latest issue of Nature.

Instead of starting from a silicon wafer or other substrate, as is usual today, researchers have made it possible for the structures to grow from freely suspended nanoparticles of gold in a flowing gas.

Behind the discovery is Lars Samuelson, Professor of Semiconductor Physics at Lund University, Sweden, and head of the University's Nanometer Structure Consortium. He believes the technology will be ready for commercialization in two to four years' time. A prototype for solar cells is expected to be completed in two years.

"When I first suggested the idea of getting rid of the substrate, people around me said 'you're out of your mind, Lars; that would never work'. When we tested the principle in one of our converted ovens at 400°C, the results were better than we could have dreamt of," he says.

"The basic idea was to let nanoparticles of gold serve as a substrate from which the semiconductors grow. This means that the accepted concepts really were turned upside down!"

Since then, the technology has been refined, patents have been obtained and further studies have been conducted. In the article in Nature, the researchers show how the growth can be controlled using temperature, time and the size of the gold nanoparticles.

Recently, they have also built a prototype machine with a specially built oven. Using a series of ovens, the researchers expect to be able to 'bake' the nanowires, as the structures are called, and thereby develop multiple variants, such as p-n diodes. A further advantage of the technology is avoiding the cost of expensive semiconductor wafers.

"In addition, the process is not only extremely quick, it is also continuous. Traditional manufacture of substrates is batch-based and is therefore much more time-consuming," adds Lars Samuelson.

At the moment, the researchers are working to develop a good method to capture the nanowires and make them self-assemble in an ordered manner on a specific surface. This could be glass, steel or another material suited to the purpose. The reason why no one has tested this method before, in the view of Professor Samuelson, is that today's method is so basic and obvious. Such things tend to be difficult to question.

However, the Lund researchers have a head start thanks to their parallel research based on an innovative method in the manufacture of nanowires on semiconductor wafers, known as epitaxy -- consequently, the researchers have chosen to call the new method aerotaxy. Instead of sculpting structures out of silicon or another semiconductor material, the structures are instead allowed to develop, atomic layer by atomic layer, through controlled self-organization.

The structures are referred to as nanowires or nanorods. The breakthrough for these semiconductor structures came in 2002 and research on them is primarily carried out at Lund, Berkeley and Harvard universities.

The Lund researchers specialize in developing the physical and electrical properties of the wires, which helps create better and more energy-saving solar cells, LEDs, batteries and other electrical equipment that is now an integrated part of our lives.

Besides Lars Samuelson, the other authors of the article are: Magnus Heurlin, Martin Magnusson, David Lindgren, Martin Ek, Reine Wallenberg and Knut Deppert, all employed at Lund University, except for Martin Magnusson, who works at start-up company Sol Voltaics AB.

About emiconductors Semiconductors are materials that neither conduct electricity as well as metals, nor stop a current as effectively as insulators -- silicon and germanium are two examples. These properties may not sound attractive, but in actual fact they are excellent. The reason is that we can influence the conductive capacity of the materials, for example by introducing impurity atoms, known as doping. Materials with different types of doping can be combined to manufacture products such as transistors, solar cells or LEDs

Ed note. The above article was written in British English. Some words were changed to standard American English spelling.

Mauritania is a country in northwest Africa that is bordered by the Atlantic Ocean on the west, Senegal on the south, Western Sahara on the north and Mali on the East. It is not a hotbed of amateur radio activity. However, a group of intrepid Polish operators are running a well disciplined DXpedition from there under the call sign 5T0SP. You'll find the spotted on DX Watch or other sites. They will be on the air until December 10 so try to grab a little of this action. I worked them on November 29 with a vertical antenna and nominal 100 watts of power. They are working multiple modes.

RESTRUCTURING: FCC PROPOSES IMPLEMENTING 2007 WRC ACCORDS

The FCC has issued ET Docket 12-338 that if passed as written is pretty good news for ham radio. Bill Pasternak, WA6ITF, is in the newsroom with the details:

ET Docket 12-338 released on Tuesday, November 20th proposes modify the rules governing a number of communications services for amateur radio which falls under Part 97 of its

rules, the proposed changes are quite positive.

Starting at the low end of the electromagnetic spectrum and working our way up, Docket 12-338 proposes the creation of a permanent albeit shared allocation from 135.7-137.8 kHz with
a power output of 1 watt effective radiated power to an isotropic radiator. To those who have never heard the term isotropic radiator, this is a theoretical point source of electro-magnetic waves that emits the same intensity of radiation in all directions. In everyday language it really means hams will only be able to transmit a few hundred milliwatts of power if that.

Ed note. The concept of an isotropic radiator is just plain silly for any practical application.

Now going up a few hundred kilohertz to the 160 meter band.

Docket 12-338 proposes to change the Amateur Radio Service allocation to make 1800 through 2000 kHz a primary amateur service allocation.

By way of background, historically, the 1715 to 2000 kHz band was allocated exclusively to the Amateur Service. In 1953, the FCC removed the 1715 to 1800 kHz segment from the Amateur Radio Service and allocated the 1800 to 2000 kHz band to the Amateur Service on a shared basis with the Radionavigation Service. Then in 1983, the FCC allocated
the 1800 to 1900 kHz band to the Amateur Service on an exclusive basis and the 1900 to 2000 kHz band to the Radiolocation Service on a primary basis and to the Amateur Service on a secondary basis.

Lastly, in the WRC-07 Table Clean-Up Order, the FCC combined the 10 to 10.45 GHz and 10.45 to 10.5 GHz bands in the Federal Table of Allocations. In doing so, the frequency band was inadvertently not changed to 10 to 10.5 GHz. To fix this the FCC will revise the text of three footnotes that pertain to this spectrum by adding the existing Amateur-Satellite Service allocation to the list of permitted non-federal services. It will also order that non-federal stations in the Radiolocation Service not cause harmful interference to the Amateur Service in the 10 to 10.5 GHz band.

As we said, its pretty good news for ham radio here in the USA.

Hey ham guys – be careful if you plan to go to Mexico

According to a report from Mexican news site Animal Politico, at least three dozen engineers and technicians have been kidnapped in the past four years.

Felipe Gonzalez who is the head of Mexico's Senate Security Committee told Animal Politico that none of the engineers who disappeared have ever been found.

Mexican authorities blame the notorious drug running gang the Zeta's for the kidnappings. The Mexican military is trying to dismantle an extensive radio network built and operated by the drug cartel but to date authorities have not

had much luck shutting it down. Not only is much of the equipment super-easy to replace, but the drug runners have apparently found some unwilling assistance by kidnapping and enslaving technicians to help build it. Among them is at least one IBM employee and several communications technicians from a firm owned by Mexico's largest construction company.

Last year the Mexican military found and dismantled one such drug runners radio network spread across northeastern Mexico that included 167 radio antennas sites. As recently as this past September, Mexican marines found a 295-foot-high transmission tower in Veracruz State.

The bottom line: It seems the drug gangs have discovered that two-way radio is a tool that they will not be without but the Mexican government is doing all it can to take these clandestine operations off the air.

For the Amateur Radio Newsline, I'm Cheryl Lasek, K9BIK,
near Zion, Illinois.

Ed Note: I would avoid driving a car with ham plates, wearing apparel that identifies you as a ham operator or operating from desolate locations in US/Mexican border counties Maybe I'm overly cautious but that's my advice.

In an article in the news blog *The Hill*, Professor Darren Hays notes that the Verizon network suffered widespread outages and with no electricity, telecommunications were problematic. The old corded telephones were plugged in by those who still had them and there were lines for payphones. For those of you too young to remember these are coin operated telephones that in many places are nothing more than a distant memory.

Professor Hays also had some nice words for the amateur radio community. He says that others resorted to using ham radio to communicate, which was found to be very effective. Hays pointed to ham radio networks like ARES and RACES which are dedicated to communications outages. Hays, who holds the call KI6UEI, noted that a battery-powered radio was at one point his only connection to the outside world during the storm.

Hays' article notes that as the recovery in the aftermath of Hurricane Sandy continues, questions are being raised about our nation's preparedness for emergencies. On Friday, November 9th it was reported that two Congressmen, U.S. Representatives Peter King and Steve Israel, were requesting that the military assume control of Long Island Power Authority. This in an effort to restore electricity to more than 150,000 homes and businesses which at that point still without mains power.

Back in 2006 the newspaper *Newsday* reported that the Long Island Power Authority was warned that its critical infrastructure could not handle a major storm. One of the issues noted was that the utility was utilizing a 25-year old mainframe computer system that could not track power outages or other critical functions like monitoring for rotting utility poles.

For the Amateur Radio Newsline, I'm Bruce Tennant, K6PZW, in Los Angeles.

The above articles came from the Amateur Radio Newsline. Some typographical and grammatical errors were corrected. Here's the link

http://www.arnewsline.org/storage/scripts/nsln1842.txt

Cloud computing and storage seem to be the current rage. If you are looking for a storage solution where you can put data from your iPhone, Android, tablet, laptop or home computer so you can access it from any location, check out www.cubby.com I would not store personal data, financial data, or other sensitive material on it 'come on, ya gotta use some common sense. However, it should be good for storing some files. Five GB are free.

The ARRL 10 meter contest is this coming weekend (December 8,9). Technicians have privileges on 10 meters from 28.300 to 28.500 and there will probably be a lot of action there. If you are a Technician, take advantage of this opportunity to get some HF time. Here is a link to the contest and it will tell you all you need to know. http://www.arrl.org/10-meter

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The National Geographic Channel has a show that comes on Wednesday evening at 8:30 Central time that may be worth the watch. Check out Rocket City Rednecks. Here a link: http://channel.nationalgeographic.com/channel/rocket-city-rednecks/

That's all for this time. Have a great and safe Holiday (derived from the Olde English "holy day") season. Have fun on the radio. We'll see y'all in January – provided we survive December 21.