NARS NEWS

W5NC
Houston, Texas
Northwest Amateur Radio Society

The Northwest Amateur Radio Society
an ARRL Special Services Club #2120

December 2015

Important Dates

Monthly club meeting:
Third Friday of each month, 7:30 pm.
Cypress Creek Christian Community
Ctr. 6823 Cypresswood Drive

Board of Directors Meeting
Tuesday, December 26, 7:30 pm.
Ponderosa Fire Station
17061 Rolling Creek Drive

VE License Exam:
Saturday, January 23, at 10:15 am.
Lone Star College Tomball Library
located at the south entrance to the College. Official address is:
30555 St. Hwy 249.

Lunch Break—North
Dec 9, Baker Street Pub
Dec 16, Sweet Tomatoes
Dec 23, BJ's Brewery
Dec 30, Gianna's
Jan 6, Spring Creek BBQ.
Jan 13, Pei Wei

.**Lunch Break—Medical Center**
Dec 9, Marco's Mexican Bar & Grille
Dec 16, Silver Palace Chinese Buffet
Dec 23, Pappas BBQ
Dec 30, Morningside Thai
Jan 6, Pronto Cucinino
Jan 13, Jason's Deli

Tail Dragger's Lunch Bunch -
Mondays, 11 am.
Aviator's Grill, Hooks Aerodrome

Notice: NARS membership dues are $20 per year, renewable on anniversary date.

Breakfast at Denny's
Saturdays, 7 a.m.
6504 FM 2920, Spring, TX
Just a few blocks west of Kuykendahl at the intersection of TC Jester & FM 2920

December 18th…. The Annual K5ZTY Show-n-tell Is upon us!

You only have but a few days to get your entry in the competition.
Make your move now!

Any projects, kits, or mods you've made to your station over the past year, we'd like to hear about it.
In this hobby, bragging rights are everything!

**** See NARS Award Banquet announcement on page 4 ****

"Merry Christmas, Dude…
This is going to cost you a lot more than cookies & milk!"

President's corner….

December is the month for our annual "Show and Tell" meeting. Bill Stietenroth (SK), K5ZTY, was one of our members who helped to get this annual event started. It is an opportunity for you to share with other members of NARS things that you have built recently or in the past to enhance your radio "shack" or even just as an interesting project. Virtually anything we build ourselves improves our technical skills. There are always decisions to be made concerning circuitry, parts placement, functions, construction details and other components of the building process. Kits that you have constructed are fine; bring them. They are useful and we learn from them. Sometimes we are able to improve them or incorporate them into something else we want to construct.

This meeting is not a contest. It is a way to share ideas and to see these ideas, not in the abstract, but as something with physical form. Please come to our December NARS general meeting on December 18, 2015, and share something that you have put together. If you think that what you built is too simple, bring it anyway. It will be something that another member will be able to use that they had never thought of.

This has been an enjoyable year for me as NARS president. I look forward to seeing you at the December meeting.

Brad Nelson – WD5GNI
NARS President

Merry Christmas!

FROM POLAND TO NORTH KOREA

Polish radio amateur Dom Grzyb, 3Z9DX, who received permission to operate in early 2016 from the Democratic People's Republic of North Korea is busy preparing for his trip to what is the most elusive and most wanted DXCC entity. His plans are to travel to the capital, Pyongyang, in December and firm up his operation's guidelines with officials there. He will be bringing his rig and a vertical antenna to show them.

He has been approved to operate with the callsign P5/3Z9DX on three bands, using 100 watts. His goal is to concentrate on 20 meter operation, working SSB, over the course of five days, but he may also work 15 and 10 meters. Such an operation would be a major achievement for any ham. The last DXCC-approved operation from North Korea was in 2001 and 2002. Ed Giorgadze, 4L4FN, of the Republic of Georgia worked SSB and RTTY as P5/4L4FN. Giorgadze had been in the country at the time, working for the UN's World Food Program in Pyongyang.

ARRL DX News

Saturday, November 21 VE Test Session Results at Lone Star College Tomball Library

We had 4 candidates taking 5 tests.

Element 2 tests given: 3; passed 3
Element 3 tests given: 1; passed 1
Element 4 tests given: 1; passed 0

Congratulations to:

Jason Messer - new Technician
William Dicken - new Technician
Darryl Gunter - new General

Thanks to the VE's in attendance:

Martin Rogoff N5GPS
Mike Bragassa K5UO
Ron Horton KF5LFL
Steve Protz KA5AUD
Ship Ferguson K5LLR

The next monthly session will be held Saturday, January 23. The time and location will be announced in the future. Anyone who wants to observe and/or participate in a session is always welcome. Just let me know if you want to learn more about becoming a volunteer examiner.

73, Keith Dutson NM5G
NARS VE Session Manager

Are RFID ignition systems secure?

This isn't exactly what an amateur radio operator needs to know, or is it? Much of this technology is going to end up in our ham equipment, like it or not. Your next car purchase will probably complicate your installing mobile stuff. It might help to understand why….

In 1997, Ford Motor Co. equipped the Mustang with one of the first RFID ignition immobilizers in the U.S. car industry. Theft levels for the Mustang immediately dropped 70 percent from just two years prior . The results were stunning, and pretty much every other carmaker followed suit. Today, the RFID (radio frequency identification) industry claims a 90 percent reduction in theft rates for car models equipped with RFID starters, immobilizers and entry systems . Both automakers and insurance companies have full faith in the devices, even going so far as to label them unbeatable. And certainly, the technology is an impressive display of security innovation. RFID relies on radio-frequency signals to create a system that, for the first several years it was in use, was indeed uncrackable. In the 1990s, many a car thief was thwarted by the rather brilliant addition of RFID immobilizers to regular old physical keys.

An RFID immobilizer is a chip embedded in the top part of an ignition key. This chip sends out an encrypted string of radio-frequency signals, basically a particular number of impulses broadcast on various radio frequencies to create a specific code, when the driver inserts it into the ignition-key slot. Without this code, the car either won't start or won't activate the fuel pump. So even if someone hotwires the car or copies an ignition key, the ignition isn't going to work because it hasn't received the proper radio-frequency code.

If you have a car that comes with a special "valet key," the immobilizer probably shuts down the fuel pump if the car is started without the code. This means the car is going to run only on whatever fuel is left in the fuel line, which will only get it a couple of blocks. Thus the valet key -- valet parkers only have to drive a car very short distances. If they try to drive off with your car, they won't get very far. Neither will any other potential car thief.

-Early RFID systems, both keyless entry (the key fob device with the button you press to unlock the car) and vehicle immobilizers, used 32-bit encryption. That means they sent a code of 32 impulses. With 32 bits in the code, there are billions of possible combinations . In newer schemes, including remote starters that let you start a car with the push of a button, the codes have 40 bits, which increases the possibilities. With so many possible codes, the system seems unbeatable. And at first, it was. Cars with RFID security do have lower theft rates, and it makes sense. This type of system makes getting in and driving off a lot more complicated. Keyless entry and immobilizer systems work in pretty much the same way. Let's say you have a keyless-entry fob. It's a standard radio-transponder setup: Inside is a circuit board, a radio transmitter, a battery and an antenna. When you get near your car, perhaps 5 feet to 10 feet (a few meters) away, you press the button to unlock your doors. The RFID chip in the fob sends out a code of 40 impulses broadcast on different frequencies. The corresponding RFID chip in the car receives this code and accesses the car's software to find out if the code is the right one. If it is, the doors unlock.

This is called an **active RFID system**, since pushing the button actively sends out the code, instead of receiving it. The immobilizer chips in ignition keys are also active. Keyless ignition, on the other hand, is a **passive RFID system**. Instead of the ignition chip sending out the code, the car sends out the code and the ignition chip receives it. Ignition systems have no battery (or a different kind), and they have a lower-power antenna, so they won't broadcast as far. It's an additional security measure. On its face, the system seems impenetrable: There are billions of possible sequences, and brute force will no longer get the car moving. Add in **rolling codes**, which are becoming more common -- a system in which the expected sequence changes slightly every time you push the button -- and the options get closer to a trillion. But as with any security system, it's only impenetrable until thieves figure out a way around it. Look at safes and burglar alarms; you've got to update those frequently in order to stay ahead of the robbers. Car RFID systems are no different.

RFID hacking is the most high-tech approach to car theft yet. Using hardware that grabs radio frequency signals out of the air, and software that decrypts it, thieves with time on their hands can steal an RFID-equipped car. In 2005, researchers at Johns Hopkins University in Maryland demonstrated how. The fact is, people steal cars equipped with RFID security. It's especially common in Europe, where RFID has been used in cars for longer than in the United States. To prove the weaknesses of the system, researchers at Johns Hopkins went about breaking in. What they found was startling.

If you equip a laptop computer with a microreader, a device that can capture radio signals, you can capture the transmissions sent out by an RFID immobilizer key. Positioned within a few feet of the RFID transponder -- say, sitting next to the car owner in a restaurant -- the laptop sends out signals that activate the chip. When the key begins broadcasting, the reader grabs the code, and the computer begins decrypting it. Within 20 minutes, you've got the code that'll tell the car to start. (Once you have a good database of codes stored in your laptop, the time gets much shorter.) Pair that code with a copy of the physical key or a hotwire job, and you're on your way. In the case of the passive ignition system, the process is similar, but you need only stand next to the car, not the person carrying the key.

In cars that have RFID entry and ignition, it's an all-in-one process. Break the codes, and you can not only unlock the doors, but also start the car and drive away. According to some security experts, this is the problem with the system. RFID is a really great addition to a car's physical security system, but on its own, it allows for complete access with just a single act of decryption. For a thief with good equipment, it's a snap. This is where the RFID, insurance and car industries object to the portrayal of RFID systems as faulty. Sure, the Johns Hopkins researchers could break it. They have money and hardware. Car thieves would never take the time or spend the money to break an encrypted code.

But with the payoff of tens of thousands of dollars for a high-end car, thieves have decided to give it a whirl. And whereas locksmiths weren't allowed to copy RFID-equipped keys at first, annoyance on the part of car owners who lost their keys led to a loosening of the rule. Now, both locksmiths and regular consumers can buy kits that can capture and clone an RFID code. The result is that people are losing their RFID-secured cars, and insurance companies call the owners' claims fraudulent because RFID security is uncrackable. The owners must be lying. There are a few possible solutions to this problem that don't involve scrapping RFID. The Johns Hopkins scientists propose several ways to better secure the system: First, RFID makers should switch from 40-bit to 128-bit encryption; owners should wrap their fob in tinfoil when not using them, to help block fraudulent signals from activating transmission; and most important, carmakers should use RFID technology as an additional security measure, not the sole one. As with any other security system, the advice is simple: Layer up. Don't rely on any single protection method. Instead, use several different types of security in order to make it as complicated as possible to bypass.

Salvation Army Bell Ringers ring in the 2015 season!

This makes the tenth year that NARS members have volunteered to ring the bells for the Salvation Army. A team of 14 members set up operations on Dec 5th at the two entry ways of the Wal-Mart located at Spring Cypress and US 249. The Salvation Army, Houston Northwest Corps., had designated NARS as one of two social groups that support their fund raising season on a continuous basis. Our volunteers proudly don the blue aprons with the club's logo and get to work manning the kettles. Jerry Whiting, KB5VGD, has been coordinating this event since its conception back in 2005.

Richard Nelson KF5WRD

Trivia for the Senior set….

If you are a serious movie buff of old Hollywood films, you are sure to remember this actress. But what you may not realize is that Hedy Lamarr has become more known for her technological invention of more then 75 years ago than for her movies.

Hedy Lamarr, actress and inventor.
Star of silver screen during the 1930's and 40's.
In 1942, invented an electronic guidance system then known as "frequency hopping," but now called "spread-spectrum radio technology."
This system evolved to later make "smartphones," Wifi & other wireless technology possible.

NARS Awards Banquet set for January 15th, 2016….

January 15 will open the new year with our 31st Awards banquet. It is only fitting that we celebrate, once again, our good fortune by gathering together to enjoy good eats, pleasant conversation with our companions and guests and to recognize the accomplishments of those who have worked so hard to keep NARS what it is today.

This year, the Awards Banquet will be held at Nona's Italian Café, 1025 Alma Street, Tomball. The cost is $20 per person. Reservations and payment are required prior the event. We anticipate an attendance of some fifty persons, so make your reservations early. Seating will begin at 6 p.m. with dinner served at about 7:15 p.m. Guests will be served at the table, one of the three entries being selected individually from the menu below.

Please mail your reservations and checks to:
NARS, P.O. Box 90387, Houston, TX 77290-0387
Include the names of those attending.

Menu

Salads

Greek salad:
Mixed lettuce, celery and bell peppers
Cucumber & feta cheese in vinaigrette dressing
Caesar salad:
Traditional garlic & anchovies dressing
Croutons & parmesan cheese

Main course

Pollo Paisano
Stuffed with spinach & cheese topped with mushrooms
Sun dried tomato, capers & onion in a vodka
Crème sauce served with vegetable & potato
Trout Capri
Grilled trout lemon butter white wine sauce capers
Served with vegetable & potato
8 oz. Sirloin steak
Grilled steak topped with green pepper corn
Served with vegetables & potato

Beverages
Ice tea, water, coffee

November election results….

Election was held at the November meeting for the 2016 Board of Directors. The following positions were approved as follows:

Pres:	Keith Dutson NM5G
Vice Pres:	Richard Nelson KF5WRD
Treasurer:	Sheree Horton KF5LMJ
Secretary:	Martin Rogoff N5GPS
Directors:	Deral Kent K5WNO
	Lester Mignerey KB0MEF
	Mike Bowen N8ILU
	Ron Horton KF5LFL

Redd School happenings!

Lollie Garay KD5WZM reporting

Digital clocks

The LABRATS Radio Club's weekly "meets" in the Redd School Science Lab on Fridays have been a busy, engaging scene for everyone this semester! Jerry Whiting KB5VGD and Elmers Brad Nelson WD5GNI, John Ellis W5PDW, Tom Hoherd KK5YU, Ron Horton KF5LFL, Sheree Horton F5LMJ and Terry Myers KQ5U worked with 12 students to build digital clocks. Jerry thought the students would enjoy building them as Christmas presents for their parents.

The club has grown in membership since last year due to the enthusiasm of both students and the NARS mentors who volunteer their time every week. Ask any of the young members and they will tell you they enjoy the Radio Club for a variety of reasons from talking on the air to soldering! Jerry has developed a great sequence of activities that teach the basics of radio propagation, on-the-air protocols, Morse code, and electronics. As in years past, the integration of hands-on electrical construction has sparked curiosity in the young members.

As they learn new skills they are also learning how to transfer this new knowledge into other areas of schoolwork - Science, Technology, Engineering and Math. These STEM disciplines are the focus of the new National Science Standards (http://www.nextgenscience.org/next-generation-science-standards) and reflect the needs of preparing students for the technological generations to come! Extending student learning outside of the classroom provides unique opportunities that motivates and inspires! Thanks to Jerry and the Elmers for doing both!

Underwater ROVs

Redd Middle School electives offer students unique opportunities to branch out into projects outside of the normal curriculum. One of those projects is the underwater ROVs- remotely operated vehicles. Using the MATE (Marine Advanced Technology Education) competition as a model, students have built ROVs and tools from scratch using PVC pipes, bilge pump motors, and whatever else they can imagine. At the end of the semester, teams compete against each other to amass points as they complete underwater challenges in the pool.

This year John Ellis W5PDW put his experience working with ROVs into practice by mentoring our ROV class. He also helped the students acquire and install underwater cameras that would allow them to "see" their targets better. Its always such a plus to have John come to class and help students troubleshoot their problems or design issues. Thanks John!

This year the International MATE competition will be held in June 23-25 at NASA Johnson Space Center Neutral Buoyancy Lab. Our teams will not be competing, but it's a fabulous opportunity to go out and see what is possible! For more information, visit http://www.marinetech.org/

Until next semester, Happy Holidays to all!

Welcome, Congratulations and Condolences

Welcome new members,
Kenneth Peabody KF5PJA, Bill Hielscher KG5WPH and Jerome Istin KG5GIV
We note with regrets the passing of the mother of Ron Horton KF5LFL.

NARS Resource list

General help:
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Deral Kent K5WNO
281 548-7476 k5wno@juno.com

Al Manard N6VQO
281 292-3113 almanard@gmail.com

Digital modes:
Marty Fitzgerald W5MF
281 251-4301 fitz6@swball.net

VHF/UHF:
Brian Derx N5BA
281 251-4301

PC Programming & Ops:
Keith Dutson NM5G
281 516-1466 keith1@dutson.net

Building Electronics & kits:
Mark Tyler K5GQ
281 587-0256 k5gq@juno.com

Interference (Basic advice):
Terry Myers KQ5U
281 443-6042 tmyers1031@sbcglobal.net

Card checking for awards:
Bob Walworth N5ET—DXCC
281 292-2221 rwalworth@charter.net

Brian Derx N5BA—WAS, VUCC
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Bob Walworth N5ET—WAZ
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2 meter Wed. 8 pm. 146.660, tone 100
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Meetings
Monthly General Membership 3rd. Friday each month (except January) at 7:30 pm.
Cypress Creek Christian Community Ctr.
6823 Cypresswood Drive

Saturday Breakfast
Denny's 6504 FM 2920, Spring
(Just a few blocks west of Kuykendahl)

Wednesday Lunch-11 am.
Various places. Info on front page.

NARS News is published monthly by the Northwest Amateur Radio Society. Send all articles and materials for the newsletter to: Editor, Joe Sokolowski KD5KR, 281 353-2196 kd5kr@arrl.net Deadline for articles to appear in the next newsletter is the last day of each month.
Northwest Amateur Radio Society is a Special Services Club affiliated with the American Radio Relay League, ARRL Club No. 2120.