



SHORT SKIP

Volume 64 Issue 7

July 2016

From the Oval Office

by Marv, WV9O, LCARC President

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REPEATERS

Freq	Location
147.000	Merrillville
147.240	St. John
442.075	Merrillville

All Lake County ARC Repeaters are open to all amateurs. All repeaters must have a PL of 131.8 set in order to access.



Well folks it July all ready and the summer is half over with! Last month we had the ARRL Field Day test/contest. Field Day went well, though because of the heat and low member turn out (5) we only operated 4 hours. We had 2 radios and 2 antenna. With points for various ARRL bonuses, I would roughly say our score is less than 1400.

The June speaker is Richard Dulls from NIPSCO on tracing and solving radio interference.

Coming LCARC Events

- IPOTA {Indiana Parks on the Air} club picnic September 10, 2016
- Indiana Parks on the Air (INPOTA) is an awards program for radio amateurs and shortwave listeners that encourage portable operation in Indiana State Parks..

“Be there or be square”!

From the Oval Office, 73 Marv WV9O

Special Event Stations to Mark Pope’s Visit to Poland

from ARRL Letter



Several special event stations are poised to mark the visit of Pope Francis to Poland. The Pope will be in Poland July 27-31 to once again take part in World Youth Days in Kraków. This is Pope Francis’ first visit to Poland, where he will also make stops at the national shrine in Czestochowa to honor 1050 years of Christianity in Poland and pay respects to the victims of the former Auschwitz Nazi concentration camp.

World Youth Days is a biannual event initiated by Pope John Paul II, the first Polish Pope (Karol Wojtyła). Some 2 million young Catholics are expected.

Special event call signs will include HF0F in Kraków, as well as HF31WYD, HF2SDM, and HF-7SDM.

Meeting Minutes

June 10, 2016

- Meeting called to order at 7:31
- Introductions were made with 18 attending and 2 new Amateur radio operators
- No minutes for last meeting due to program start time.
- Treasury's report read and accepted as read with PO box and Insurance paid.
- Ham Radio classes in fall. Post Tribune and Times articles and community calendar events show club meetings and field day event.
- Discussions about field day and activities around field day.
- Support for Brickyard run to get operators to help Lee and John.
- EMA no report.
- DX report get on the air and work. 6 meters has been open.
- No new business
- Estate sales for silent keys and what help can be done.
- Marv WV9O out of the hospital and at home.

Speakers W9KTP and K9HL gave a great presentation about building a home brew 572B Push-Pull amp (see article in this issue). Raffle held and small prizes were handed out.

Meeting adjourned at 8:30

No One, Anywhere, Having Good VHF QSOs

By WBØRUR, on the scene

GRAIN HARVEST, Idaho — A new study by the National Radio Retransmission Legion indicates that no ham is having an actual conversation on any frequency in the 2 meter band.

peopleinshackJonny “Doc” Doolittle of rural Grain Harvest, Idaho, says it’s not just poor propagation that is to blame.

“We all bought one of those low-cost Chinese handie-talkies,” says the potato farmer via telephone from his home just outside of LaCrosse. “Now all we hear on the local repeater is every 6th word with lots of garbled transmissions and noise. Those radios are feature packed with everything except a good receiver. Oh, there’s the occasional complete sentence...but nothing you could even vaguely describe as a full conversation.”

As a result of the study, the North American VHF Repeater Owners Association is considering a resolution to “power-down” all repeaters between the hours of 7 a.m. and Midnight since no one is able to make radio contact anyway.

HamHijinks.com



Shield Hat: Signal Proof Apparel

Remember when folks were making foil hats to prevent aliens, the NSA, other clandestine agencies from intercepting our brain waves? Well, now there is a more stylish and covert way of keeping our thoughts secure as well as preventing us from being exposed to dangerous RF energy from Wi-Fi transmitters, HTs, etc. I am not kidding, watch this web site. We may want to do a group order as a club!!!! The link below will give you full information.

<http://tinyurl.com/hf94bnk>

July Program

The July 8th LCARC Club program will feature Richard Dull of NIPSCO. He is in charge of tracing down radio interference complaints for NIPSCO. He tracks their sources and remedies interference be it from; power lines, telephone lines, or cable TV.

Hey, Which Coaxial Cable Should I Use?

Bob KONR

Coaxial cables are the most popular form of transmission line for getting our signals to and from our antennas. There are many types of cable to choose from and it can be confusing to choose the best one. In this article, we'll cover the most common choices of cable to get you started. We'll focus on the most popular cables, with 50 ohm impedance to match the output impedance of our transceivers.

Here's the really simple, short story:

CABLE TYPE	DIAMETER	USAGE
RG-58 type	0.194 in	Standard cable for mobile installations
RG-8X type	0.242 in	Larger and lower loss than RG-58 but still convenient for shorter cable runs and jumpers, Up to 50 feet in length at 50 MHz or below (Rule of Thumb) Up to 25 feet in length at 146 MHz (Rule of Thumb)
RG-8U type	0.405 in	General purpose coaxial cable, best for long cable runs. This includes Times LMR-400

At one time, RG-58, RG-8X and RG-8U were military standards but now these terms are used rather loosely and refer primarily to the size of the cable. Accordingly, I added "type" to the term to indicate that it is not a precise standard.

All three of these cable types will handle 100W or more at frequencies below 500 MHz, which covers most ham transceivers. If you are running more than 100W, you should check the power specification of the cable you are using. Times Microwave Systems has a very handy online calculator for coaxial cable specifications, which I used for the calculations in this article.

Signal Loss

All coaxial cables will attenuate the signal as it travels down the cable and the signal loss can be significant. For example, 3 dB of signal loss means that you lost half of the transmit power as it propagates down the line. This loss applies for both transmit and receive... we'll get less power out to the antenna and we'll have less signal showing up at the receiver.

The cable loss will be determined mostly by the size of the cable (bigger is better), the dielectric used in the cable (the insulator between the center conductor and the shield) and the frequency of operation. As an example, consider a 100 foot run of cable for use at 146 MHz, which is high enough in frequency and a long enough run such that we'll see some significant losses. According to the Times Microwave calculator, 100 feet of RG-58 style cable produces a loss of 5.5 dB, which means that only 28% of the power gets through the cable. (The percent power delivered is shown as Cable Run Efficiency in the calculator.) This is not good, so we would rarely (never?) want to use RG-58 for that long of a cable run.

Changing the cable to RG-8X drops the loss to 4.5 dB, which is only a minor improvement. (4.5 dB loss corresponds to 36% of the power makes it through.) However, using RG-8U type cable decreases the loss to 2.4 dB (58% of the power makes it through the cable), so clearly the larger cable size has an advantage. Now let's change the dielectric. LMR-400 is a popular cable that has the same diameter as RG-8U but with a lower loss dielectric (Foam PE). The 146 MHz loss through 100 feet of this cable is 1.5 dB, or 0.9 dB better than ordinary RG-8U. A loss of 1.5 dB means that we still lose 30% of the power.

Now let's see what happens when we change the frequency of operation. If we use our 100 foot run of LMR-400 on the 20m band (14 MHz), the loss is only 0.5 dB. This means that 90% of our signal power makes it through the cable. You can use the Times Microwave System calculator to try out different combinations of cable length, cable style and operating frequency.

You can get a little more technical info about coaxial cable loss from this Question of the Week article.

Other Specifications

There are a few other cable specifications that you may be concerned about, depending on application. Cables with solid center conductors are less flexible than those with stranded center conductors. The dielectric material and the outer insulating jacket can also affect the flexibility of the cable. For portable operations, I make it a point to get cable that is rated "flexible" because it is easier to handle and deploy. Direct burial cable has a durable outer insulation that will withstand being buried in the ground. The type of outer shield used in a cable can vary widely, with some cables providing much more shielding and isolation than others.

This is a quick introduction to choosing the right cable for your amateur radio station. I hope it points you in the right direction. It's always a good idea to buy quality cable from a reputable supplier and to read the specifications for that exact cable type.

Is DMR a mass adoption phase winner in digital voice radio?

By Rick Zack, K1RJZ

At Dayton this year, it was no surprise that digital technologies got a lot of attention, including HF software-defined radios (SDRs), like the ICOM IC-7300 and the FlexRadio 6000 series, and VHF/UHF digital radios, such as the Tytera DMR radio that sells for about \$130. Hams are excited about digital radio because it is something new to explore. As you can see below, it was standing room only at the DMR Forum at Dayton this year.

Dayton_DMR_Forum

One of the reasons for this excitement is that they are software-based, and unlike hardware radios, SDRs (some are really HF radio servers) are easily upgraded, and manufacturers can add compelling new features as technology changes. That means that you get a new radio every year without needing XYL approvals!

If you follow technology (smartphones, laptops, the internet, whatever), you know that there are certain common phases that all technologies must pass through. These include the pioneer stage, the early adopter stage, and then “the chasm.” Once a technology adoption has survived these three stages, it then reaches the mass adoption phase, and it begins to grow very quickly. Competing technologies then need to adopt. If they don’t, they will eventually fall by the wayside.

The Tytera MD-380 DMR radio was going for \$109 at Dayton. The normal price is around \$130.

There is no question that DMR technology (Digital voice Mobile Radio) for hams has jumped the chasm and is now into the mass adoption phase, and may soon enter the low-priced commoditization phase. Inexpensive, mass-produced Chinese DMR digital voice + FM portable radios were being sold inside the Hara arena for as low as \$109 with a color display and free programming software. Remember that these are Part-90 type accepted, commercial-quality radios, not low end junk with dirty transmitters and low quality RX audio.

In addition, there were many used, first generation Motorola DMR radios for sale in the flea area. These radios perform just as well as the current models, but have less memory. From what I saw at Dayton, I have no doubt that DMR is on a run and is now well into the low-priced mass adoption phase.



The Tytera MD-380 DMR radio was going for \$109 at Dayton. The normal price is around \$130.

D-STAR, Fusion and to a lesser extent NXDN are all established and are not going away, but in many areas they are not experiencing any meaningful growth when compared to DMR. D-STAR repeaters in New England, for example, have been converting to DMR because DMR radios are far cheaper than D-STAR radios, have more features, and have far superior networking. ICOM D-STAR repeaters have not been highly successful in high-RF areas, such as you typically find on top of skyscrapers and busy mountaintop sites. The D-Star technology is way cool, the ICOM repeater hardware... much less so. Some repeater clubs have figured out ways to use non-ICOM RF guts for their repeaters, and those have been successful, but it also takes some smart techies to pull that off. A tip of my hat to them!

Many clubs are wisely taking advantage of the subsidized Yaesu Fusion repeater offers but most in New England seem to be using them in either dual mode or FM-only Mode. Fusion in digital mode has been very slow to get traction in these parts of the world. It is not a bad format, but Yaesu got in the game very late, Fusion is proprietary and has far fewer working features than other technologies. As a big plus, Fusion in high-bandwidth mode can send pictures such as “ground truth” weather status pictures. Most other digital voice modes cannot do that.

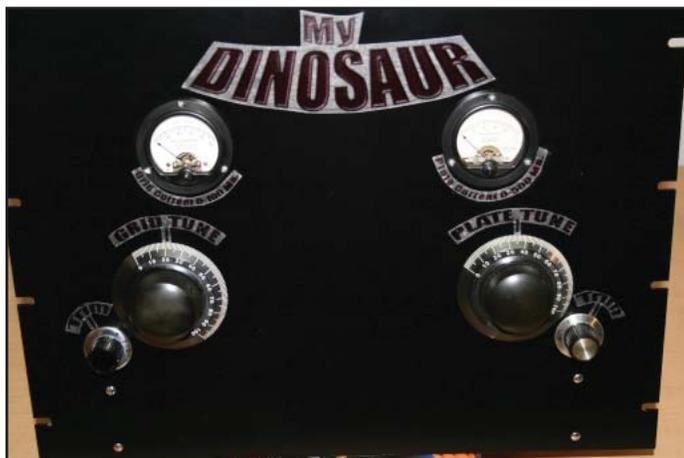
NXDN, another commercial digital voice format used by the railroad industry, has some pockets of ham activity such as in southeastern Massachusetts but nationwide adoption is very slow. I don’t want to sound biased, I’m just reporting what I am hearing from multiple face-face sources and Dayton presentations.

None of these digital voice technologies or FM will go away and all of the digital modes are generating a lot of interest in the hobby. They are all fun and if you are a ham, you will have a ball trying them out. I have used D-STAR and P25 digital voice for years, and though I have yet to try Yaesu Fusion, I am very much looking forward to it. But, from what I saw at Dayton, DMR now seems to be a serious leader the digital voice technology adoption curve.

For more information, check out a recent DMR podcast on the [HamRadio360 podcast](#).

Dinosaur Visits Club

By Steve Mollman kd9hl@yahoo.com



At the June meeting, Jerry Hess-W9KTP, gave an interesting and informative talk and slide show about home brewing of a "push-pull" HF amplifier.

The amp that Jerry designed and built is an adaptation of amps that were quite common during the 1930's and 1940's. They were popular in those days because they could be used on AM and CW. Jerry's creation uses two 572B tubes and puts out about 500 watts "without a strain". Because Push-Pull amplifiers are seldom seen these days, he has nicknamed his creation "My Dinosaur".



Some of Jerry's objectives were:

- Recreate a "classic" amplifier using modern tubes.
- Use as many parts as he could from years of stocking his "Junk Box".
- Put out a clean signal.
- Be safe.

It appears that he was successful in meeting those goals. Except for the purchase of the tubes and some other miscellaneous parts, everything came from his junk box. A spectrum analysis shows a clean signal that is comparable to (and better than some) modern commercially built amps. He gave an extensive demonstration of the various safety interlocks and shielding that were built into the design. Obviously, W9KTP doesn't want to become a SK statistic from an overdose of high voltage! This is a high quality piece of construction that rivals commercial equipment.

The amp has a separate power supply that weighs 75 pounds.

W9KTP, an Extra Class holder, has been licensed nearly 60 years. After learning Morse code in the Boy Scouts, a local ham, K2SNP discovered him reading "How to Become a Radio Amateur." K2SNP's elmering led to a novice license and the rest is history.



Besides home brewing equipment, he is an avid DX'er having reached the top of the DX Honor Roll with 350 entities worked and has been an active participant in several CW traffic nets. CW is his favorite mode, having inherited his skill from his grandfather, a Pennsylvania Railroad telegrapher. Besides Ham Radio, he is also a skilled woodworking/furniture maker and musician. He plays the



bagpipes and a pipe organ that he constructed himself. QST Magazine has seen some of his writings.

Jerry spent his professional career in process control management at Bethlehem Steel. He is a licensed Professional Engineer.

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