

DAARN HAMS  
APRIL 2021

SPECIAL  
POINTS OF IN-  
TEREST:

- **Arkansas Statewide DMR Net, Every Thursday 9 PM Central Daylight Time**
- [DAARN Hams Web Site](#)
- [DAARN Hams Facebook Site](#)
- [Arkansas Repeater Council](#)
- [Digital Café](#)
- [Brandmeister Networks](#)

INSIDE THIS  
ISSUE:

|                              |   |
|------------------------------|---|
| History of TG-3105 DMR Net   | 1 |
| DAARN in Social Media        | 1 |
| Demystifying Code Plugs      | 2 |
| DMR In Action                | 2 |
| Personal Achievement         | 3 |
| No Internet                  | 3 |
| Path to License Upgrade      | 3 |
| Feature Article DMR Overview | 4 |
| About DAARN Membership       | 5 |

# DMR Arkansas Amateur Radio Net

## Those DAARN Hams!



Thursdays 9:00pm Central time

Talk Group Brandmeister 3105

## The History of the Arkansas Statewide DMR Net

In May of 2015 the Tytera Company released the MD-380 Hand Held Portable DMR Radio. This radio supported both Tier I and Tier II protocols. One of the first radios with a faithful implementation of the Motorola MotoTrbo system with full DMR (Digital Mobile Radio) compatibility.

Following the introduction of the MD-380 into the Amateur Radio Community, the DMR usage spread all across the U.S. and Canada. DMR was not new to Europe, they had been using DMR Repeaters and Mobile Radios for nearly 10 years at this point in time.

Since Amateur Radio Net Operations is one of the primary focus areas of our Communications Systems, it was only natural to start a net on this new DMR System.

The Arkansas Statewide DMR Net on Brandmeister Talk Group

3105 was started by Denny, K5DCC, in late 2015. Denny's Nets always had a large number of check-ins. His nets pretty were much the watering hole for DMR Information. In early 2018, Denny moved, and the Arkansas Statewide DMR Net Suffered Greatly.

After a year of virtually no DMR Nets in Arkansas, Tim, K5TEL, picked up the torch and revived the Statewide DMR Net once again. The Net had a large following from across the state analog with members of the CAUHF (Central Arkansas UHF) club. Tim and Larry, N0LSB always passed useful information every week during their Nets.

Then Tim and Larry moved away in January 2019, but kept the DMR Net active for a few months from PA. Then once again Arkansas was left without a DMR Net.

Then in January of 2020, the

DAARN (DMR Arkansas Amateur Radio Net) was formed. The goal was to continue the great work started by Denny, Tim and Larry.

Daniel, N5DDW, Thom, KG5STP and John, WB5BHS, formed the DAARN Hams Organization

The Thursday night of the week worked well, but since there were several other Amateur Radio Nets on Thursday Evenings taking the earlier time period. So, the new time was moved to the 2100 Local Time (9PM).

The Net has been in operation for over a year, please come over to the Brandmeister Network on Talk Group 3105 at 2100 (9PM) Local Time and Check in with us.

### [TYT Corporation](#)

Retail about \$90  
Single Band - UHF  
DMR and Analog  
Color LCD Display



## DAARN Hams in Social Media

Not only are the DAARN Hams active on the airwaves with DMR Nets and Special Events, we also have a presence on the Internet with Social Media.

Take a moment and check out

our web site at:

[DAARN Web Site](#)

Along with the Web Site we also have a Facebook page. Many DMR users come to the DAARN

Facebook Page, to ask questions, post important information and see the latest DMR News for Arkansas. The link to the Facebook page:

[DAARN Facebook Page](#)

## DEMYSTIFYING CODE PLUGS

*The Code Plug is the Heart of your DMR Radio. All of your Radio's behavior is controlled by the Code Plug.*

The heart of DMR Radio is the Code Plug that controls the user's preferences of how the radio will operate. Most DMR Radios come with a basic Code Plug as an example. It is up to the user to add the local Repeaters, Favorite Talk Groups.

There are four major sections in a Code Plug. They are the General Settings, Digital Contacts, Channel Information and Zone Information.

The General Setting section of the Code Plug contains information about the Radio and the User. The most important part of this section is the DMR Radio ID. Many Amateur Radio Operators have their Call Sign and Name appear on the start-up screen. This information is kept in the General Settings section.

The Digital Contacts contains not only your Contacts, but all of your favorite Talk Groups. The Digital Contacts Section associated a name with a DMR

ID or a Talk Group. As an example many Amateur Radio Operators in AR have a Talk Group called AR WX associated with the 31051. Others use the name of AR SkyWarn. The choice is yours. Just use a name that you like.

The Contact Name in the Contacts is the same way, many want the other station's Call Sign to show up, while others just want their name. This is entirely up to your liking. You can either enter their name or call sign or both, providing your radio has enough room on the display.

The Code Plug's Channel Information contains all the information about Repeater or Simplex Channel you are wanting to use. With repeaters you select the Repeater Type either Digital DMR or Analog. If the Repeater is a DMR Device you then select the Talk Group you wish to use on that channel. It is not uncommon to have 10 channels defined

with your favorite Talk Groups. And these 10 channels will be identical for five or six different repeaters. The only difference will be the frequency specific to each repeater.

The Zone Section is where you tie all the information together into a single entry. Some individuals have a Zone for every Repeater in their area. Others seem to find that assigning a Zone to a geographical area works better for them.

There are many other sections that make up the whole Code Plug. Not all DMR Radios are the same. But they all have the four basic sections outlined here.

Most DMR Radios come with Software that allows you to manage your own Code Plug. Each CPS (Customer Programming Software) program is specific for a given radio. Most are free, but some companies such as Motorola charge a fee.

## DMR In Action—Medical Emergency

Ken Dix, KB2KBD, started his Monday, like any other day, never suspecting to be involved in a life saving event using Amateur Radio. Especially from across the pond.

Richard Tashner, N2EO, experienced a Medical Emergency. In this case his DMR Radio was closer than his Phone. He put out a call for help and was

answered by Maxis Johnston, GM0MRJ. Immediately Maxis switched his DMR rig to the North American Talk Group and called for "Anyone in the States". His call was answered by Ken on their local repeater.

Ken then called the local Police Department in N2EO's area.

The Police Dispatcher was able

to hear the conversation between Ken in the U.S. and Maxis in the UK. The dispatcher was amazed that the call went from New York, to Scotland and then to Delaware.

Help arrived and a Happy Ending thanks to Two Amateur Radio operators and DMR.

From the ARRL/ARES News



# Personal Achievement

We want to take this time to spotlight one of our Founding Members of DAARN and one of our own Net Control Stations,, Tom, KG5STP.

Last year, 2020, when the country was starting to move into the lockdown mode with limited travel, Tom decided he would use this time to his advantage. His goal was to Learn CW (Continuous Wave or Morse Code).

CW Academy is one organization that teaches Morse Code for Free. They offer four levels of courses.

Beginner, Basic, Intermediate and Advanced are the different classes. If you are starting out with no knowledge, such as Tom, then the Beginner Course is your starting point. If you already know the Code but want to improve your CW Skills for higher speed or contesting then Intermediate or Advanced classes might be your starting point.

So, in September 2020, Tom started the Beginner CW Class with CW Academy. By December he knew the code and could both send

and receive CW.

In January 2021, Tom started the Basic Class. By the end of class in February, Tom was able to make CW Contacts in the ARRL's International DX CW Contest. This is an impressive achievement.

In the past week Tom has completed several CW QSOs on the air with no problems.

You can find additional about [CW Academy Here](https://cwops.org/).

(<https://cwops.org/>)



**“DMR Repeaters can support two different QSOs simultaneously on different Time Slots. Analog repeaters are limited to only one QSO at a time”**

## What happens when the Internet is down

One of the most common questions that get asked about DMR Communications, is what good is this when the Internet is down.

When the Internet Connectivity is lost during an emergency situation, the repeater will still be functional. The DMR Repeater continues to function for all radios that connect to it from the geographic area that the repeater reaches. In this case the repeater will not be linked to other repeaters via the Internet.

With an Analog Repeater you can only have one conversation at a time. This means that only one person at a time can talk through an Analog Repeater. One person talks and the other station(s) listen.

With a DMR Repeater you have two different Time Slots. So TWO separate QSOs can be conducted simultaneously and neither QSO will know about the other. A DMR Repeater acts like an Analog Repeater on Steroids. The DMR

Repeaters are actually like having two different Analog Repeaters. Except the DMR Repeater is on a single frequency.

So in the event of an infrastructure failure where the Internet is down. The DMR Repeaters continue to function except with twice the capabilities. Local users of the repeater continue to talk via Local Talk Groups or the Repeater ID usually referred to as the FOX Talk Group.

## Path to upgrade

Some of the more common questions being missed on the Amateur General and Extra Class Exams are the ones concerning Decibels.

This month we are going to show the easy way to calculate the dB Power value for power loss in a mobile installation.

The formula we will use is this:

$$dB = 10\log_{10}[P_2/P_1]$$

Where  $P_1$  is the power in and  $P_2$  is the Power out.

Here is a typical real world calculation. If you measure the output of your UHF DMR transmitter at the radio you will read 45 Watts. But when you measure the power at your antenna you only measure a little over 20 Watts. What is going on?

Lets do the math, Power In is 45 Watts, Power Out is 20 Watts.  $20 \text{ Watts} / 45 \text{ Watts} = .4444$ . Now  $\log_{10}$  of  $.4444 = .3521$ . Next multiply by 10.  $.3521 * 10 = 3.521 \text{ dB Loss}$ .

RG-58 has 3.36 dB loss in 30 Feet. So you can easily see over 1/2 of your power is being lost in the RG-58 Coax at 450 MHz.



# DMR Overview—Feature Story by Daniel N5DDW

DMR is similar to analog repeaters, but it involves sending digital voice over the radio. This allows two conversations to use the same repeater at the same time, as well as allows communication within 100's of different talk groups through that repeater. Additionally, DMR repeaters all over the world are linked together so you can talk to people all over the world. I will try to explain it without getting into the technical details. It may seem complex at first, but know we are here to help. What I describe below is an introduction to the practical side of DMR and does not go in depth of the specification or how repeaters work.

Like using any repeater, you need to know the frequency for transmit and receive for that particular repeater and have your radio setup for that frequency. The difference between an analog repeater and a DMR repeater is that for DMR you additionally choose a talk group you want to participate in on the DMR network as part of your setup. A talkgroup can be thought of as a virtual room for people to get in to talk to each other. DMR allows thousands of talk groups to all work on the same frequency of the repeater. Talk groups are specified by a number within the radio, but they also have names. These are defined on the DMR network and are the same worldwide and they do not change. For example, The Arkansas statewide is 3105 on the Brandmeister DMR network. Each state has a statewide talk group.

You can choose to use that talk group on any DMR repeater anywhere in the world and it will communicate with any other DMR repeater that is also participating on that talk group. You can look up these talk groups on the DMR network providers website. For brandmeister this can be found at: <https://brandmeister.network/?page=talkgroups>

The interconnectivity between all DMR repeaters across the globe makes it easier to talk to people anywhere DMR reaches. I often hear people from Australia, China, and Europe on DMR talk groups. I will not get into how a repeater handles having thousands of talk groups available in this discussion, but know that at any given time a repeater will only have a few talkgroups active at a time. To activate the talkgroup you want to use, you set your radio for that channel (repeater frequency+talk groupID) and key up the radio. This instructs the repeater to start participating in that talkgroup.

Using a DMR radio; Within the DMR radio and the programming you will have zones and channels. The pairing of the talk group and the repeater frequency is what makes up a channel. If you want to use talk group 3105 on the Conway repeater, you create a channel and specify the Conway repeater frequency, and the 3105 talk group ID. If you want to use that same talk group on the Little Rock repeater, you define a channel

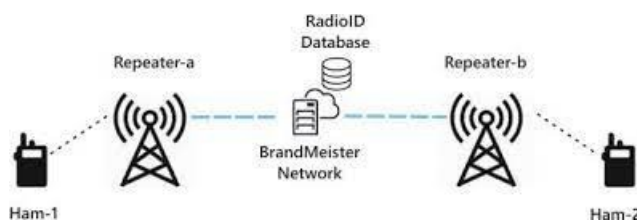
that specifies the Little Rock repeater frequency and the talk group ID 3105. Thus you may end up with many channels defined, with multiple channels for the same talk group ID with one for each repeater you plan to use in your travels. To make it simpler to manage, these channels are grouped in what is called a zone. The channels you put in a zone are up to the user, and the same channel can be in multiple zones. Many users like to group the channels into zones by repeater as this makes it easier to think about so that you select the zone based on your geographic location and which repeater you are going to be using.

The way to operate a DMR radio is very similar to using an analog repeater but with an extra step. You tune your analog receiver to the local repeater frequency you will be using and can then talk to anyone on that repeater, or other repeaters it is linked to. With DMR, you select the group of channels for the local repeater you want to use, then select the talk group you want to use within that group (zone) and can then talk to anyone else in the world that is also on that talk group.

This may seem very complex at first, but there are people in the club that are willing to help you get setup and on the air, and will take you technically through the programming as far as you want to go. -Daniel



*“I often hear people from Australia, China and Europe on DMR Talk Groups.”*





## Organization

### DAARN Hams April 2021

How to Contact us  
On the Web:

[DAARN Hams](#)



Facebook:

[DAARN Hams 3105](#)



E-Mail

[info@daarn.org](mailto:info@daarn.org)



### DMR Arkansas Amateur Radio Net

The purpose of the DAARN Organization is to further the advancement of DMR communications. Our focus is not only Arkansas but anywhere Amateur Radio Operators want Digital Communications.

The main focus of DAARN is to spread all the information we can about DMR Communications. We do this by helping others, making presentations and producing educational materials about DMR.

If you want to help E-Mail us at:

[info@daarn.org](mailto:info@daarn.org)

# DAARN Membership Information

The **BASIC DAARN MEMBERSHIP** is totally **FREE** to anyone interested in DMR Communications and spreading the word to the General Public about Digital Communications. Again, **DAARN Membership is totally Free**. The only requirement is to have an interest in DMR Communications and willingness to help others.

We do offer two levels of paid memberships. They are the SuperStation and the BigGun categories. These paid memberships usually belong to commercial accounts.

BigGun Member dues are \$100 per month. If you pay in advance you will receive two months for free. After you pay the \$1,000 in annual dues you will receive a Hand Held

DMR Radio, also with a Custom Code Plug written to your specifications.

SuperStation Member dues are \$1,000 per month. By paying in advance you get two months for free. Also after paying the \$10,000 annual dues, you will receive a Mobile DMR Radio and mobile antenna, along with a Custom Code Plug programmed to your specifications.

**Again, the BASIC HAMSHACK MEMBERSHIP IS FREE.** You have all the same rights and access as the Paid Membership Subscriptions.

All DAARN Members will have access to any training material or presentations produced by DAARN Hams.

And of course all levels of DAARN Membership will receive the DAARN Hams Newsletter, DAARN Hams Net Reminders and breaking news concerning Amateur Radio and DMR Communications. We will not flood your E-Mail inbox, but you will receive weekly reminders of the Arkansas Statewide DMR Net on Thursday Evenings at 9PM CDT on Brandmiester Talk Group 3105.

