



THE COMMUNICATOR



Mailing Address: P. O. Box 976, Nokomis, FL 34274

W4AC Repeaters: 444.100 MHz (DMR) & 146.805 MHz (-) (PL100Analog)

Incorporated 1984

<http://www.tamiamiarc.org>

June, 2020

In this issue:

- President's Message:** 1
- Meeting Notice:**1
- Meeting Minutes:** 2
- Minutes & Tech Tips:** 3
- DX Jack's Page:** 4
- Repeaters:** 5
- Repeaters:** .. 6-9
- Repeaters:** .. 10
- Club Calendar:** ... 11
- Membership Application:** . 12

President's message...KJ4NDO

I'd like to thank Dr. Sheeba Mesghali of Johnson and Mesghali, Physicians, for her effective presentation and detailed update on the Coronavirus during our May meeting. We appreciate the time she took to speak to us. Thanks, Doc.

The Summer Field Day exercise will be held on June 26, 27 and 28. Our location will be Al Culbert's house. Set up will begin on the 26th with operations beginning at 1400 Local on the 27th, lasting 24 hours through to the 28th. We will place the radios at the proper social distance and wear masks. At this point in time we are limited to a gathering of 10 individuals. We should be able to schedule a fluid, rolling number of 10 radio operators, as operators come on and off shift, to meet station set-up and operational needs. Maybe that restriction will change in June. If so, we will adapt our Field Day set-up, location, and staffing for operations to the Coronavirus rules that are in effect at the time of the event.

Want to GET OUT of the house? Want to do real radio operations, hear the rush noise, make contacts? The signup sheet for Field Day will be available on or about 10 June. Be the first on your block to sign up before the spaces are filled.

I note that the National Hurricane Center (NHC) 2020 outlook calls for a season about 140% more active than average with four Category 3 to Category 5 hurricanes. The National Hurricane Center test - to check the readiness of amateur radio stations and operators - takes place on Saturday, May 30, 1300-2100 GMT. The NHC call is WX4NHC. Although the NHC will be operating on HF, VHF, UHF, APRS, and Winlink, they will center their activity on 14.325 MHz and 7.268 MHz. Their aim is to make many brief amateur radio contacts exchanging signal reports and/or basic weather data. If you are looking for something to do on Saturday, the 30th, give the NHC a call.

I'll be leaving for Maine at the end of June, be back in September. Hope everybody has an enjoyable summer. Stay safe.



73s to all.....Jim, KJ4NDO

TARC ZOOM meeting scheduled for 7:00 PM, June 10, 2020
Check Groups.io for the link to connect. No meetings July & August.

Next Issue

**Watch for
The
Mid-summer
Issue
By mid July**

TAMIAMI AMATEUR RADIO CLUB

The monthly club meeting was conducted on the 2-meter repeater and was called to order at 7:00 PM by president Shortill, KJ4NDO. Jim recited the pledge to the flag. Introductions were made by name and call sign for those that did not previously email the secretary that they will be participating.

MINUTES: Jesse Snyder, KW4IT, moved to accept the minutes of the April 8, 2020 meeting as published in The Communicator. The motion was seconded by Joe Shortill, W1XXV, and approved by the membership.

CORRESPONDENCE: TARC received a number of QSL card requests from the FL QSO Party, which have been given to Jack Sproat, W4JS, to handle.

TREASURER'S REPORT: Treasurer Frank Wroblewski's, W2XYZ, financial report indicated a beginning balance of \$4,965.34, receipts of \$41.00, expenses of \$52.00, and an ending balance for the month of April of \$4,954.34. Andy Durette, KB1HIP, moved to accept the club financial report forwarded to him for review. The motion was seconded by Ken Magill, KK4IGK, who was also forwarded a copy of the financial report. The report was approved by the membership.

COMMITTEE REPORTS:

SUNSHINE: Jim Shortill, KJ4NDO, reported that Hans Napfel, WB2ZZB, has returned home from the hospital and is resting comfortably. Dick Engel's (AA4PE) XYL, Mary, recently had eye surgery and Dick advises that things are looking up. Chet Fennell, KG4IYS, recently had a couple of back surgeries and expects to be home sometime soon. Amazingly, Chet was on EchoLink for this meeting!

VE TESTING: Steve Phillips, NS4P, said that the Sarasota County libraries are still closed for meetings; therefore, the May test session was canceled. The next test session is tentatively scheduled for June 13 at the Venice library; however, the VE testing team may need to explore other alternatives such as modified remote testing if social distancing restrictions are still in place.

LIAISON TO QCWA: Due to COVID-19 and Florida's social distancing restrictions, there was no May QCWA meeting.

Minutes of the 05/13/20 Meeting

REPEATER / TECHNICAL: Frank Wroblewski, W2XYZ, reported that both the digital and analog repeaters were working well. The digital net is held on the club 444.100 DMR repeater using Talk Group Local 9. The club 2-meter analog repeater frequency is 146.805 MHz (-) PL 100. The digital net opens Tuesday at 7:30 PM. The 2-meter net opens Thursday at 7:30 PM. Hams can participate on this net via EchoLink using a computer, an iPhone or an Android system based phone. Click on W2XYZ-R (Node 571146) on the EchoLink directory screen to establish EchoLink contact. The 10-meter net is on frequency 28.450 MHz, upper side band, and begins immediately after the conclusion of the 2-meter net. The 10-meter frequency was chosen so Novice/ Technician licensees could participate.

For those that are looking for an alternative to breakfast at Peach's, Tom Wilson, W1ICU began a Virtual Breakfast gathering on Wednesdays at 10:00 AM. For details please refer to the Groups.io site.

MEMBERSHIP: Paul Nienaber, KN4BAR, reported that club membership roster is available on our members only website page. There are 95 regular members, 18 first year members, 7 Life members, and 1 comp for a total membership of 121.

OLD BUSINESS: 1. FL QSO Party. Frank Wroblewski, W2XYZ, reported that the FL QSO Party held on April 25 and 26 was a huge success! Fourteen members participated mainly from their home QTH using the club call sign. The club made 2,842 QSOs (as opposed to 1,017 QSOs made in 2019) using CW and phone for a total of 653,016 points.

2. June 2020 Field Day. Jim Shortill, KJ4NDO, mentioned Field Day will be held June 26 – 28; however, if Sarasota County is still restricting the gathering of large groups the club may not be able to participate. Currently, the North Jetty is closed.

3. Club Remote Station. Tom Shrilla, W8QJF, stated that he is working with the software manufacturer to support multiple users for the remote station. When the remote station is fully operational, hopefully in the fall, he will do a presentation for the club.

4. Fox Hunting. Paul Nienaber, KN4BAR, reported the hunts are on hold until the state of FL is fully open.

Minutes, con't

5. Donated Gear. Steve Phillips, NS4P, said that there is lots of equipment to be had - some even come with manuals. A partial list was printed in The Communicator.

6. TARC CW Training Net. Steve Hawley, K4EU, reported that the group meets every Tuesday morning at 1100 on 7122 KHz. They use the same procedures that are used on the Tuesday Thursday club chat nets. Per CW lingo, they use Q-signals to request check-ins (QNI), to excuse net members (QNX), and to close the net (QNF). When all members have checked in, the net control will call each station for comments. Once that's completed, and if there are no other check-ins, the net is closed.

The net is in its second month of operation averaging six check-ins per session. The net has had 16 different stations check in. Steve will continue to be Net Control and encourages all members to check in if you have any desire to further or improve your CW skills.

NEW BUSINESS: 1. Contest University. Steve Hawley, K4EU, mentioned that Contest University (CTU)

is normally presented during the Dayton (Xenia) Hamvention. CTU teaches you to be a better con-tester, but also teaches you about antennas and other interesting aspects of ham radio. Since Hamvention is canceled this year, CTU is being presented free of charge online via ZOOM video conference and YouTube. If you attend you are eligible to win an Icom IC-7610 transceiver.

2. Board of Directors Meeting. Jim Shortill, KJ4NDO, mentioned the May Board of Directors meeting was canceled as there were very few items to discuss. The next Board of Directors meeting will be on June 6 at 1:00 PM. Please bring any critical topic to the attention of the President.

ADJOURNMENT: The meeting adjourned at 7:30 PM. There were 24 members and 1 visitor on the air.

Program: Dr. Sheeba Mesghali presented COVID-19 update to the group.

At the end of Dr. Mesghali's discussion, Net Control signed off frequency 146.805 MHz and returned the frequency back to its normal use.



THINGS TO DO:

CW net - Tuesdays, 11:AM - 7122 kHz - Steve, K4EU

Virtual breakfast - Wednesdays, 10:00 AM - ZOOM - Tom, W1ICU

Contact Tom for sign-on URL



TOM'S TECH TIPS:

Chrome Remote Desktop

Now this is COOL! Access your shack, adjacent, home, parents', etc. PC with **Chrome Remote Desktop** from your desktop, laptop, tablet or phone. No port-forwarding and no-nonsense...and it also works through a VPN. You don't even need to know yours or the remote PC's dynamic or static IP address. This can augment Log Me In, Teamviewer, Remote PC or AnyDesk. The video is sharp and audio clear. Use FTP or a shared DropBox link, etc. to transfer files. Here's an excellent tutorial hyperlink:

<https://www.computerworld.com/article/3230909/chrome-remote-desktop-access-remote-computer-easily.html>



DX Jack's page....

..... By Jack Sproat, W4JS



MAJOR CURRENT/UPCOMING DX ACTIVITY & PROPAGATION HIGHLIGHTS

CURRENT and/or SCHEDULED DX ACTIVITY										
COUNTRY – CALL SIGN	ACTIVITY PERIOD	BEARING	HF BANDS and BEST OPENING TIMES (UTC)							
			80	40	30	20	17	15	12	10
Antarctica – 8J1RL by 2 JA ops, CW & Digi	Now to Jan '21	158	NO	02-06	0900	NO	NO	NO	NO	NO
Mongolia – JU85UIA by 6 ops	Now to 31 Dec	354	NO	NO	NO	22-04	NO	NO	NO	NO
Tunisia – 3V8SS by KF5EYY, **	CQ WW WPX	57	01-04	22-07	21-04	11-23	19-21	NO	NO	NO
Georgia – 4L8A, **	CQ WW WPX	37	NO	00-03	23-04	11-22	17-20	NO	NO	NO
China – B14WDX by 6 ops, **	CQ WW WPX	345	NO	NO	NO	13-16	2400	NO	NO	NO
Mariana Is – KH0W, **	CQ WW WPX	306	NO	09-11	11-12	1200	21-24	NO	NO	NO
Luxembourg – LX2OI, **	CQ WW WPX	44	01-06	23-08	22-04	11-24	20-21	NO	NO	NO
Aland Is – OH0Z by team	CQ WW WPX	31	0300	00-07	00-04	12-23	NO	NO	NO	NO
Faroe Is – OY1CT	CQ WW WPX	32	01-07	23-09	22-01	20-22	NO	NO	NO	NO
New Zealand – ZM1A, ZM4T, **	CQ WW WPX	237	08-09	05-12	04-13	02-06	23-04	23-01	NO	NO
Alaska – KL7/KC1KUG, SSB/CW/ some FT	02 to 27 June	327	--	04-12	02-06	21-04	NO	--	--	--
Cayman Is – ZF2FD by KK5XX, ++	10 to 17 June	170	21-14	09-07	--	18-01	--	--	--	--
St Kitts & Nevis – V47JA by W5JON, SB/FT	11 June – 02 July	114	22-11	20-14	00-24	10-05	12-02	16-01	22-24	NO
Guantanamo Bay – KG4MA by W1SRR	± 15 Jun – 15 Jul	135	21-13	06-24	11-05	16-02	22-24	NO	NO	NO

Prepared 27 May 2020 based on the 25 May 2020 *The Weekly DX*, <https://www.nq3k.com/>, <https://dx-world.net/> and <https://dxnews.com>

Notes: Times shown are for S-5 or better signals and 60% or better opening probability. ??? = Call Sign or Date not yet known; ++ = Mostly SSB; ** = Mostly CW; NO = No Opening forecast, NIL = band is open but signals below S-5 threshold. Long Path bearings and opening times are underlined. All forecasts are calculated using VOACAP <http://www.voacap.com/hf/>.

-- MAY SOLAR ACTIVITY --

Through 27 May, the 10.7 cm Solar Flux ranged from 66 to 71, with a mean value of 69.1. The A_p index never went above 6 during May.

To date, the Sun has devoid of any sunspots during the month of May.

-- JUNE FORECAST --

Solar activity is expected to continue at very low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is expected to be at quiet to isolated unsettled levels through the month.

The 10.7 cm Solar Flux is "flat lined" at 70 for the entire month, as well as the A-index being at 5 during all of June.

(From NOAA *Weekly Highlights and Forecasts*, 25 May 2020, NOAA *27-day Space Weather Outlook Table*, 25 May 2020, and 45 *Day AP Forecast*, USAF, 25 May 2020.)

-- CONTEST ACTIVITY --

The CQ WW WPX Contest is 30-31 May, however as there is a dearth of scheduled DX for June, the better potential stations which should participate have been listed above.

While there is never contest activity on the WARC (12, 17 and 30m) bands, potential propagation is shown for stations participating in the CQ WW WPX Contest as such stations often warm up and operate on those bands before and after such contests.

-- CLUB LOG'S MOST WANTED --

Here's the top 20 Most Wanted DXCC entities as of 24 May 2020.

1. P5 - DPRK (NORTH KOREA)
 2. 3Y/B - BOUVET ISLAND
 3. FT5/W - CROZET ISLAND
 4. BS7H - SCARBOROUGH REEF
 5. CE0X - SAN FELIX ISLANDS
 6. BV9P - PRATAS ISLAND
 7. KH7K - KURE ISLAND
 8. KH3 - JOHNSTON ISLAND
 9. 3Y/P - PETER 1 ISLAND
 10. FT5/X - KERGUELEN ISLAND
 11. FT/G - GLORIOSO ISLAND
 12. VK0M - MACQUARIE ISLAND
 13. YV0 - AVES ISLAND
 14. KH4 - MIDWAY ISLAND
 15. ZS8 - PRINCE EDWARD & MARION IS.
 16. PY0S - SAINT PETER & PAUL ROCKS
 17. PY0T - TRINDADE & MARTIM VAZ IS.
 18. KP5 - DESECHEO ISLAND
 19. SV/A - MOUNT ATHOS
 20. VP8S - SOUTH SANDWICH ISLANDS
- FWIW, Italy is #339 and the U.S.A. is 340.
(From <https://dxnews.com/dxcc-2017/>)

-- DXPEDITION OF DXPEDITIONS --

Did you participate in DX World's **DXpedition of DXpeditions (1989-2019)**? All the info's at <https://www.dx-world.net/the-dxpedition-of-the-last-30-years/>. The top five are as shown:

- BS7H - Scarborough Reef (11%,)
- VK0IR - Heard Island (11%)
- 3Y5X - Bouvet Island (9%)
- 3Y0X - Peter 1 Island (7%)
- 3C0L & 3C1L - Annobon & Bioco Islands (7%)

Everything you always wanted to know about repeaters but were afraid to ask - part 1

By Steve, NS4P

This piece is a short introduction into the why and how of VHF/UHF repeaters used in Amateur Radio. We will explore the reasons we need repeaters, how they work, and the best ways to use them. We will also discuss some repeater etiquette.

First, let us define some terms:

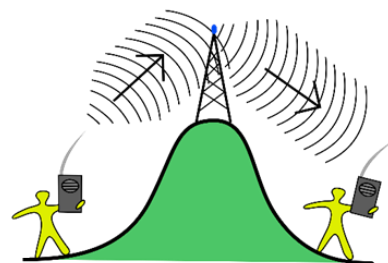
VHF – Very High Frequency. VHF is defined as 30 MHz to 300 MHz. For amateur radio, this covers the 6 m (50 MHz), 2 m (144 MHz) and 1.25 m (220 MHz) bands.

UHF – Ultra High Frequency. UHF is defined as 300 MHz to 3 GHz. For amateur radio, this covers the 70 cm (440 MHz) and 23 cm (1250 MHz) bands, among others.

Due to the short wavelengths at VHF and UHF frequencies most of the propagation is “line-of-sight” meaning that to make contact the two stations talking must literally be able to see each other. When the curvature of the earth is considered along with trees, buildings, and other obstructions this means that at VHF and UHF frequencies point to point communication is generally limited to a few miles at best. On the other hand, propagation over these short paths is very consistent. Propagation is generally reliable regardless of sunspots, local weather, seasons, or time of day. This makes VHF/UHF frequencies ideal for local communications. The key is how to increase the effective range.

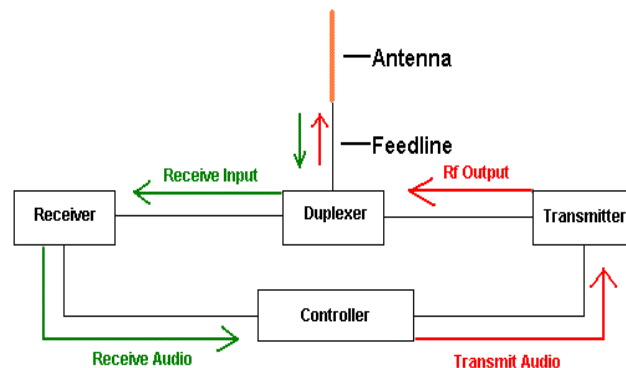
The easiest way to extend your line-of-sight is to get taller. If one, or both, of the stations is at a higher elevation, such as the top floor of a tall building, then that station’s line-of-sight distance is increased, and they can contact stations farther away. The higher they are, the further they can communicate. For example, the radio horizon distance at 6 feet of elevation is about 3 miles. At 200 feet of elevation the radio horizon is about 17 miles.

Where does a repeater fit into this? It’s not practical for each of us to go to the top of Jacaranda Trace or climb a cell phone tower every time we want to talk to someone on the other side of Sarasota County on 2 meters. To make it possible



to communicate more than a couple of blocks we put repeaters (or at least, the repeater antennas) on tall towers or buildings. That way each of us only needs to be able to talk to and hear the repeater (with its awesome range) rather than directly to each other.

How do repeaters work? There are several types of repeaters, but this discussion will concentrate on single-band, duplex repeaters for amateur radio service. In basic terms, a repeater receives a signal, demodulates it to audio, and then retransmits the signal. Here is a basic block diagram showing the major components:



BASIC REPEATER BLOCK DIAGRAM

N4UJW

Antenna – Most repeaters use a single antenna for both transmit and receive. Because the antennas are typically on tall towers, robust construction is a necessity since it is inconvenient and expensive to get people to climb the tower to fix the antenna. Commercially built antennas with 6 to 9 dB of gain are usually installed. By convention, vertical polarization is used for all VHF/UHF FM and digital repeaters since handhelds and vehicle antennas are all vertically polarized.

Feedline – Repeater feedlines are typically commercial grade hardline 3/4" or greater in diameter. At VHF and UHF frequencies, the power loss in 200 feet or so of normal RG-8 coax is unacceptably high and hardline is much more resistant to damage from weather.

Duplexer – A filtering system that permits the transmitter and receiver to share a common feedline and antenna without damaging the equipment or interfering with receptions. This component will be discussed in more detail shortly.

Receiver – Receives (duh) the radio signal and converts it to audio. Good sensitivity and selectivity, including shielding from high intensity RF fields, is required - especially at sites with several repeaters operating simultaneously. Excellent frequency stability is mandatory.

Controller – Multifunction device:

- Commands the transmitter to start transmitting when the receiver squelch opens.

Con't >>>

Repeaters, repeaters, repeaters, continued

- ☞ Contains the “timeout” timer which shuts off the transmitter after a defined period (about 3 to 5 minutes) to prevent a stuck microphone from damaging the transmitter.
- ☞ Keys the transmitter and broadcasts the FCC required Morse code ID (Mandatory every 10 minutes while the repeater is in use).

Transmitter – Takes the audio and transmits on command from the controller. Note that the transmitter in an analog repeater runs at essentially 100% duty cycle during a QSO. Busy repeaters can be in constant use nearly 24 hours a day. The transmitter finals and power supply must be rated for continuous duty to withstand this punishment. Good spectral purity is required to avoid interfering with other systems at the same site. As with the receiver, excellent frequency stability is essential.

So, how can the repeater transmit and receive on the same band at the same time on a common feedline and antenna without burning out the receiver or creating so much interference the receiver cannot hear anything? The answer is – Frequency Offset and the Duplexer:

Frequency Offset – Typical repeaters do not receive and transmit on exactly the same frequency. The difference between the receive frequency (known as the “Input”) and the transmit frequency (the “Output”) is called the “Offset”. The offset is selected based on two competing requirements. The frequencies must be close enough together so that the antenna is close to resonance on both frequencies, but far enough apart that the interference issues can be addressed. By convention, offsets for amateur radio repeaters in the USA are as follows:

Band	Offset	Direction (+ or -)
144 MHz	600 kHz	145 MHz = -600 kHz 146 MHz = + or - 600 kHz 147 MHz = +600 kHz
220 MHz	1.6 MHz	Minus
440 MHz	5 MHz	Usually minus, but sometimes plus

Duplexer – The duplexer is a tuned filter, in fact - several tuned filters, arranged in a series/parallel circuit. There are two sides to the duplexer – the receive side is tuned to pass (allow through) signals on the duplexer input frequency, but block signals on the repeater output frequency.

The transmit side does the reverse. Both a high degree of isolation (90 dB or more) and low insertion loss is required to maintain receiver performance. The duplexers are typically cavity filters – large can-like structures – precisely tuned to the appropriate frequency. Duplexers must be rated for the output power of the transmitter. Because of their large size, they are susceptible to changes in tuning due to changes in temperature, so proper selection of materials and precise design and construction is required.



Accordingly, duplexers are expensive and fragile and must be treated with care.

For repeater etiquette, the Fort Myers Amateur Radio Association has a very good getting started guide at this address - <https://fmarc.net/license-education/a-new-hams-guide/> which I will not repeat here (HiHiHi), but here a few key points:

Listen before talking

- ☞ We don't call “CQ” on a repeater – “W0XY Listen Eight Oh Five” will do the job.
- ☞ We don't (generally) use the RS (59) call quality system. Since the repeater output is about equal strength for everybody, signal strength is not generally relevant. Plain English audio reports are used (full quieting, a bit noisy, or garbled and unreadable).
- ☞ If you hear the repeater well (lots of bars on your rig) then asking for a relay for a poor quality station won't help
- ☞ Don't use “Break” unless it's an emergency
- ☞ Depending on the repeater wait for the courtesy beep or let the squelch tail “drop” or count to “2” between transmissions. If you don't the controller timer will not reset and you will “time out”. Plus, it's only polite to leave a gap for someone to join the conversation or request access for high priority traffic. Leave a gap!



DMR REPEATERS *by Frank, W2XYZ*



I'd like to tell you about DMR repeaters, ours in particular. By the time you get to read this article in the newsletter, you probably have a good understanding of how repeaters work from the other articles listed here, so I'll skip the basic details of repeaters and get down to what is different with DMR versus analog. You'll recall in the 1990's when cell phones started becoming popular with the general public, they were analog. They were on the commercial 800 MHz band and anyone with a scanner covering that range could listen in to the conversations.

If you had a cell phone back then, or listened to cell phone conversations on your scanner, you often experienced (or heard) signal fade. Signals would fade out when passing certain dense structures or going down hills, etc. Sometimes the signal would fade for a few seconds and then come back in and you could ask the caller to repeat what he was saying because he faded out. Sometimes the signal would fade and not come back at all and the call was dropped. Even when the signal didn't completely fade, but was going through a fringe area, there would be lots of static-type noise with the signal. Cell phones then, sounded much like most analog repeaters do today.

Technology progressed and cell phones switched to digital modulation. Television stations also changed from analog to digital. The benefits of changing to digital were many. For the user, there was no more static, even in fringe areas. The signal are 100% perfect or not there at all. Another benefit of digital is added security. You can't tune a scanner to the phone frequency and listen-in on conversations anymore. Digital modulation offers a moderate level of encryption to the transmitted signal. For the providers, the benefits are many. To name a few benefits: Less bandwidth required, lower power levels, higher channel density, easier multiplexing, better fidelity, error correction.

What about amateur radio? Early in this century, Icom produced a digital radio system designed specifically for amateurs, called D-Star. D-Star incorporated many of the features cell phone providers were using and thereby were able to offer hams a system with international calling, call routing, multiplexing, noise immunity, but not low cost. A D-Star radio was roughly two or three times the price of an analog radio. To encourage hams to buy D-Star, Icom gave D-Star repeaters to many radio clubs for free. D-Star

thrived and is still in use today. The price of the radio has dropped significantly and Icom no longer gives away free repeaters, but it looks like D-Star is here to stay.

Several years later Yaesu tried a similar approach with their Fusion System. It too exists in communities around the country but lacks popularity. Commercial products, like P25 (APCO25) used by police and fire around the country started coming into the ham realm. Commercial systems like Kenwood's NXDN popped up in a few locations, including our club here in Venice, for a while. The big manufacturers struggled for dominance since none of these systems are compatible with each other. Whoever was top dog got the lion's share of the amateur radio market.

Along came DMR. DMR is a commercial system developed in Europe which quickly spread worldwide. One reason for its rapid growth is the protocol (think coding) is open source, not propriety like the others. Being open sourced, many manufacturers jumped on the bandwagon and started making radios and selling them cheaply. Hams like love cheap. Tytera (TYT) began selling handhelds for \$129 (you can now get them for about \$85). Comparing a \$129 DMR radio to a \$600 D-Star radio, it's easy to guess which the hams bought. Commercial DMR repeaters also became reasonably priced. DMR grew exponentially. The rest is history.

DMR has many good features, such as one repeater can carry two simultaneous conversations, it requires only 12.5 kHz of bandwidth compared to the 25 kHz used by older analog repeaters, meaning two repeaters (four conversations) can take place in the space previously occupied by one analog conversation. The radio battery lasts much longer in a DMR radio because the radio is 'on' only half the time, it's also immune to noise from weak signals, it has higher audio fidelity, etc., etc. These are all great features, but what most people like is its ability to talk to anyone, anywhere in the world, any time you feel like it...and with perfect clarity.

Our repeater is connected via the Internet to a huge network called Brandmeister. Brandmeister is the focal point where literally thousands of repeaters are centralized, assigned an address, and routed through the Internet to the proper destination. These addresses are called "talkgroups." A talkgroup can be a

Con't >>

DMR BY XYZ, CONTINUED

country, like 505 connecting to Australia, or a state like 3181 connecting to Maine, or it can be a region such as 31121 connecting to Florida's Spacecoast. Private ID numbers, like each of us have assigned to our radios, are also routed through Brandmeister. This is what makes it possible for someone to talk to anyone anywhere.

The customary way of setting up a personal handheld radio is to divide it into geographical zones. If you were a snowbird living part-time in Cincinnati, you'd probably have a zone containing one or more repeaters in the Cincinnati area and maybe another zone you call Englewood which has connection data for our repeater. Within each zone you create channels which are locations of interest to you. Each channel holds the repeater's transmit and receive frequency, a name you give to that channel, such as Maine-wide, a talkgroup number (3181 in this case), a timeslot and a color code. We said earlier the repeater can carry

two conversations at the same time. One conversation goes in timeslot 1 and the other in 2. We have to tell the radio where to assign it in the repeater. Our convention (which might be different at other repeaters) is to put local traffic in timeslot 1 and distant (Internet) traffic is assigned to timeslot 2. Color code is a word foreign in the analog world. It's just a fancy word that means something that does the same thing as PL codes do on analog repeaters. Our repeater (and probably 90% of all repeaters) use color code 1.

That's it in a nutshell. If you want a bigger nutshell, you can read more about DMR by going to:

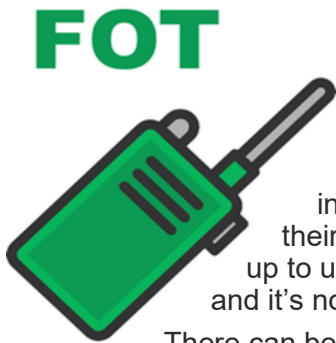
https://www.raqi.ca/~ve2rae/dmr/Amateur_Radio_Guide_to_DMR.pdf "The Amateur Radio Guide to DMR." If you read through this guide, you will see the callsign of a certain Ohioan club member used as an example. Hint: locally we call him "Mr. DMR." **73, Frank Wroblewski, W2XYZ**



Here's an addendum to the donated equipment list available for purchase. To bid on any item(s) contact Steve, NS4P at sphillips3@gmail.com

Nbr	Category	Make	Model	Serial #	Cond	Notes
95	connectors	Cable X-Perts	PL259 silv,tefl. gold pin RG8		new	bag of 25 open only missing a few
96	connectors	Cable X-Perts	N, silver teflon gold pin RG8		new	bag of 25, unopened
97	connectors	Cable X-Perts	UG176/U silv pl RG-8X adapt		new	2 bags of 25, unopened, can splitt bags
98	speaker	MFJ	MFJ-281		new	in box
99	computer	Smithtronix	RS-232		new	2
100	keyer	Hamcrafters	K42 CW keyboard		new	
101	test equipment	Analog Devices	RTI-800		good	series simulator box
102	klystron	Motorola	VA259N		new	in box, 5.9 to 8.4 GHz
103	adapters				used	jar of misc coax fittings & adapters; assorted cond
104	cable	DX Engr	CW8		new	8 conductor control wire; approximately 50 ft
105	antenna tuner	Heathkit	SA2040		parts	roller inductor, air variable caps, & stepper motor
106	radio test set	Motorola			fair	cables included
107	antenna	Cushcraft	Ringo Ranger AR2		new	2M vertical, missing a couple of small pieces
108	antenna	Cushcraft	Ringo Ranger AR6		new	6M vertical, appears complete
109	antenna	Diamond	F718		new	70cm base station, in box, n connector
110	antenna	Comet	GP3		new	2M/440 base station
111	power supply	Heathkit	HP23A		vy gd	
112	power supply	Heathkit	HP23		good	
113	cable		RG58U		new	foil & copper braid, solid, dielectric, hundreds of ft
114	power supply	Heathkit	HP23B		fair	
115	keyer	MFJ	MFJ-407D		good	
116	variac	Staco Engy Prod	3PN1010		poor	10 amp
117	transceiver	MFJ	MFJ9340		good	40M grp transceiver, MFJ cub
118	300 w DC/AC inv.	Radio Shack	22-146		good	
119	power supply	Drake			fair	
120	power supply	Drake			fair	modified, re-capped
121	power supply	Heathkit	HP13A	03221	good	
122	SWR bridge	Heathkit	HM102	3227	good	tested and works
123	cable	Andrew	CNT240		new	foam dielectric, approximately 100 ft
124	power supply	Swan	117XC	0847975	good	
125	capacitor sub box	Heathkit	IN-47		fair	
126	power supply	Heathkit	IP-18		fair	manual
127	grid dip meter	Knight	G-30		fair	no coils
128	antenna tuner	Tokyo Hy-Power	HC-400L	83030759	good	
129	SWR bridge	Daiwa	CN-465M		fair	VHF/UHF cross-needle; tested and works
130	power supply		305D		vy gd	0 to 30 volts; 0 to 5 amps; tested and works

FOT: FREQUENCY, OFFSET AND TONE BY BOB WITTE, K0NR



FOT

One question we often hear from new hams (and maybe some not-so-new hams) is “why can’t I get into the repeater?” They get their hands on a new radio, set it up to use one of the local repeaters and it’s not working. Now what?

There can be a whole bunch of reasons why you can’t get into a repeater so it is difficult to come up with a quick fix for all situations. However, in this article we’ll talk about some basic troubleshooting steps to help diagnose the problem. For this article, I am assuming that your first rig is a handheld vhf/uhf transceiver but the general approach will work with mobile or base transceivers, too.

FOT

Many times the problem is due to not having the transceiver programmed correctly. The key things we have to pay attention to are: **F**requency, **O**ffset and **T**one (**FOT**). To access a repeater you need to have its **F**requency entered into your radio, have its transmit **O**ffset set correctly and have the right CTCSS **T**one turned on. You might not need to check all of these things in that exact order but it is a good way to approach the problem. Using the programming software (and suitable cable) for your radio can be a big help.

Frequency – First you need to program in the frequency of the repeater you want to access. The actual key strokes or knob turns will depend on the particular model of radio so consult your operating manual. The frequency you enter is the *repeater transmit frequency* which will be your *receive frequency*. Repeaters are always referred to by their transmit frequency, which can be found in an online or printed repeater directory.

Offset – Next, we need to make sure the proper transmit offset is programmed into the radio. This is the difference in frequency between the repeater transmit frequency and its receive frequency. Your transceiver will automatically shift your frequency when you transmit, *if* you have the right offset programmed. In most parts of the US, the standard offset is 600 kHz on the 2m band and 5 MHz on the 70cm band, and can be either in the positive (+) or negative (-) direction. Your repeater directory will list the offset and direction. Most radios will default to the standard offset but you may have to select + or – offset. Usually

While surfing for repeater info, I happened on this article by Bob Witte, K0NR. More about Bob here: <https://www.k0nr.com/wordpress/about/>

Reprinted with permission. de K3SY

a + or – symbol will appear in the display to indicate the offset selected.

As an example, my repeater is on 447.725 MHz with a – 5 MHz offset. So you would enter 447.725 MHz into your radio, make sure the offset is set to 5 MHz and select – as the offset direction. You can verify that your radio is programmed correctly if you see 447.725 MHz displayed during receive, which should change to 442.725 MHz when you push the transmit button.

Tone – For most repeaters, you will need to transmit a CTCSS tone to access the repeater. (CTCSS is Continuous Tone Coded Squelch System.) Repeaters with *carrier access* do not require a tone, so you can skip this step. This is normally a two-step process: set the tone frequency and then enable the tone. Sometimes this is done with one selection (with “Off” being an option for the tone frequency). Some radios have separate settings for the transmit tone and receive tone. For now, just leave the receive tone off, since it can be a source of confusion. The tone that you need to set is your *transmit tone*. Most radios display a “T” somewhere on the display when the tone is enabled. Again, check your operating manual.

Kerchunk

At this point, you should be ready to try accessing the repeater. After listening on frequency for a minute, transmit and identify using your callsign. On most repeaters, you will hear a short transmission coming back from the repeater along with a courtesy beep. A courtesy beep is just a short audio tone or tone sequence that occurs after someone finishes transmitting. If you hear the beep, then you accessed the repeater. Congratulations! Go ahead and make a call and see if someone will come back to you.

Troubleshooting

What if you don’t hear the repeater coming back to you? Then we need to go into troubleshooting mode. If the radio is new, you might wonder if it is even working properly. The quality level of today’s equipment is quite good, so most likely your radio is just fine. Still, you may want to check it out.

First, you can check to make sure your radio is receiving properly. In the US, a good way to do this is to tune into your local NOAA weather transmitter. These transmitters are on the air continuously, operating >>>

FOT—continued

on 162.400, 162.425, 162.450, 162.475, 162.500, 162.525 or 162.550 MHz. These frequencies are outside of the 2m ham band but most ham transceivers are able to listen to these frequencies. You'll want to set this frequency as simply as possible...use the keypad or VFO mode to enter it directly. In most cases, you can just try the short list of frequencies until you hear the transmitter in your area.

Next, you might want to know that your radio is able to transmit a signal. The best way to do this is find a local ham nearby that can run a simplex check with you. By nearby, I mean within 5 miles or so, because we want someone so close that there is no question about whether they should be able to contact us. Program your radio to a 2m simplex frequency such as 146.52 MHz (the National 2m FM Simplex Frequency). For this test, we do NOT want the transmit offset turned on...the radio needs to be set to *simplex*. You can double check this by looking at the display when transmitting—it should show 146.52 MHz (transmit frequency is the same as the receive frequency).

For this test, we don't care about the transmit tone... it can be on or off. Have the other ham give you a call and see if you can contact him. If you happen to have a second transceiver, you can try this test yourself – just see if each radio can hear the other one. One warning: do this on a simplex frequency. Trying to go through a repeater can really confuse things because you may not have the offset and tone set properly. Even more confusing is that one radio can "desense" the other radio, which means that the other radio's receiver will be overloaded and not able to receive the repeater's signal.

Using simplex keeps things simple.

The final thing to check is whether your signal is able to reach the repeater. Well, that is a bit of a challenge! For starters, are you sure you are within range of the repeater? Have you ever heard a signal from this repeater, and was it full scale on your S meter? You may want to ask local hams about whether you should be able to hit the repeater from your location *with the radio you are using*. For that matter, you might want to check if the repeater is actually on the air – they do go down from time to time.

This brings us to an important point about the use of handheld transceivers. They are really, really handy. How else can you carry a complete ham radio station in your hand? Well, the tradeoff is that an HT operates with relatively low power (5 watts or less) and has a compromised antenna. (The standard *rubber duck antenna* on an HT is a *very convenient crummy antenna*.) You may need to add some extra umph to your signal by improving the antenna. Some good dualband choices are a longer whip such as the RH 770 antenna or a magnetic-mount mobile antenna placed on a vehicle or on other metal object.

Summary

In this article, I've tried to provide some assistance in figuring out why you aren't hitting the repeater. The most common problem for newly acquired radios is getting them programmed (**remember FOT: Frequency Offset and Tone**). Once you have that right, it is usually just making sure that you have enough signal to make it to the repeater. **73, Bob, K0NR**

Note: *this article is adapted from Hey, Why Can't I Access the Repeater? on hamradioschool.com*



Tones, schmones — who needs 'em ???

So, what's with those pesky PL tones on the repeaters? Why do I have to program them in the rig to open the repeater?

Well, there is a good reason to have them. Going back to the good old days in my former life when I was a working stiff, repeaters had some problems. I was working out of Allentown, PA where the W3OI club had a 34/94 "machine". With the 2-meter frequencies allocated for repeater operations, there are a finite number of offset combinations available. So, even with repeater coordination, there often were repeaters with the same offset combi-

nations with no great geographical separation.

When one of the old ex-cbers, who were used to running their 1kW "foot warmers" in their big rigs, got on the ham bands and didn't let go of their old ways – using a kW to access a repeater, things got squirrely. Every so often the W3OI machine would open up for the guy in Lower Podunk, NJ sending his kW our way. The result was half of a conversation not intended for our area, but tying up the local machine.

The solution to the problem was introduction of PL tones. Actually, PL is a

trademarked Motorola designation for "Private Line". The system is really a **Continuous Tone-Coded Squelch System** or **CTCSS**. By adding a sub-audible tone to the FM transmission designed to open the repeater, someone transmitting on the input frequency would not open the repeater without the tone. Thus, the addition of different tones on repeaters with the same I/O combinations of frequencies greatly reduces interference.

You can check out Wikipedia for a more detailed description of PL tones.

73, K3SY



June 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat	
<p>* Peaches opens at 6:00 AM. Orders taken at 7:00</p>	1	2 Breakfast @ Peaches * DMR net @ 7:30 PM W4AC 444.1	3	4 TARC net @ 7:30 PM W4AC / RPT 146.805 ** +10M net	5 Breakfast @ Peaches *	6	
7	8 DARN NET 11:00 AM	9 Breakfast @ Peaches * DMR net @ 7:30 PM W4AC 444.1	10 TARC meeting 7:00 PM on ZOOM	11 TARC net @ 7:30 PM W4AC / RPT 146.805 ** +10M net	12 Breakfast @ Peaches *	13 TARC VE session @ Venice Public Library 10:00	
14 	15	16 Breakfast @ Peaches * DMR net @ 7:30 PM W4AC 444.1	17	18 TARC net @ 7:30 PM W4AC / RPT 146.805 ** +10M net	19 Breakfast @ Peaches *	20 	
21 	22	23 Breakfast @ Peaches * DMR net @ 7:30 PM W4AC 444.1	24	25 TARC net @ 7:30 PM W4AC / RPT 146.805 ** +10M net	26 Breakfast @ Peaches *	27 	
28 	29	30 Breakfast @ Peaches * DMR net @ 7:30 PM W4AC 444.1	<div style="border: 2px solid red; padding: 10px; width: fit-content; margin: auto;"> <p>All events except over-the-air contacts are cancelled until further notice.</p> </div>				

THE COMMUNICATOR is a publication of the Tamiami Amateur Radio Club (TARC). It is published monthly; except during the summer months, the July and August issues will be combined. The Communicator is forwarded to all members via e-mail, and is available for viewing on the club's web site - www.tamiamiarc.org - Webmaster - Paul Nienaber, KN4BAR.

Editor - San Yoder, K3SY, who acknowledges and thanks these contributing writers this month: Jim Shortill, KJ4NDO, Patti Phillips, N4IGI, Jack Sproat, W4JS, Tom Shrilla, W8QJF, Steve Phillips, NS4P, Frank Wroblewski, W2XYZ, and Bob Witte, K0NR

Articles of general interest to club members are solicited and welcomed. Please submit and/or copy (preferably in Word) to : k3sy@arrl.net. 73, San

2020 TARC officers:

President

Jim Shortill KJ4NDO
jnmshortill@netscape.net

Vice president

Steve Phillips NS4P
sphillips3@gmail.com

Secretary

Patti Phillips N4IGI
secretary@tamiamiarc.org

Treasurer

Frank Wroblewski W2XYZ
w2xyz@arrl.net

Directors:

Peter Boers	KV4LR	peterboers@ieee.org
Andy Durette	KB1HIP	af_durette@hotmail.com
Chet Fennell	KG4IYS	chet_fennell@msn.com
Gary Hagens	K6OC	g.hagens@verizon.net
Paul Nienaber	KN4BAR	paul9aber@gmail.com
Tom Shrilla	W8QJF	tshrilla@gmail.com
San Yoder	K3SY	k3sy.73@verizon.net

TAMIAMI AMATEUR RADIO CLUB, INC. - Membership Application

NAME _____ Call Sign _____ Class _____ ARRL ? Yes ___ No ___
 LOCAL ADDRESS _____ CITY _____ ZIP _____
 PHONE _____ CELL _____ e-mail _____
 SUMMER ADDRESS _____ CITY _____ STATE _____ ZIP _____
 PHONE _____ ALT. e-mail _____
 Application date _____ PAYMENT: Amount _____ by: Check ___ Cash ___ PayPal ___ First year free ___

For payments by mail send to:
 TAMIAMI AMATEUR RADIO CLUB, INC.
 PO Box 976
 Nokomis, FL 34274
 Web site www.tamiamiarc.org payments
 accepted via PayPal [Add \$1.00 convenience fee].

Dues:
 Regular member: \$20.00/year
After 6/1 - \$10.00 to year end. After 10/31 \$20.00 thru next year.
 Family membership: \$25.00/year. Non-voting student: \$5.00/year.
 New licensee: 1/1 to 10/31 - free to year end.
 11/1 to 12/31 - free thru next year.

Please note: After two month grace period thru Feb., non-renewals will be dropped.

TARC web site: <http://www.tamiamiarc.org>

Contact: Secretary, Patti Phillips, N4IGI - secretary@tamiamiarc.org

