



THE SPARK

February, 2020

Home of the Cincinnati Repeater System

Cincinnati, Ohio

It was a great Christmas party. We enjoyed the program on the Bethany Station history. Best of all was seeing our members and wives all together again. A great evening. Bill's wife, Dorothyanne, took a lot of pictures. Some are displayed below and on page 8.



February meeting program, DMR by Ken Irwin W8LTT

Since CFMC operates a DMR repeater on UHF 443.400 MHz, perhaps members should become more acquainted with the system. ALERT!! This is not as complicated as it may seem. Read on.

DMR, Digital Mobile Radio, is one of several digital modes for voice transmission and arose from LMR (Land Mobile Radio) which is one portion of the FCC licensed and unlicensed radio services. Other common systems are D-Star, Yaesu's System Fusion and P25. One advantage of digital over analog radio is the ability to operate with weaker signals, like CW can be better distinguished below the noise floor. However, analog signals weaken until unintelligible while digital signals just are lost at the point decoding is unsuccessful, and benefits from forward error correcting. So digital signals remain clear and intelligible until they are lost. Very reliable communication, but not useful for dx.

Like other digital modes DMR makes use of talk groups, which are available internationally, although D-Star calls them reflectors and Fusion rooms. The talk groups are organized locally, state wide, regional, country wide and world-wide. In range of any DMR repeater one can access any talk group anywhere. This is because most DMR repeaters are connected to the internet. If you travel outside of Ohio, you need a different code plug, or incorporate needed channels into your code plug.

Zones are organized for use of different repeaters as you travel within the state. They are not only a method of grouping a large number of channels, but are usually organized to be in range of the local DMR repeater.

Some of the features of DMR are 12.5 KHz channels, and TDMA, which doubles the number of possible channels by allowing two independent conversations on the same frequency using time division. Another benefit of TDMA is significant reduction in battery power used while transmitting as it is only actually on 27.5 ms for each 60 ms of transmission. DMR uses what are called Color Codes, much like analog radio uses CTSS or DCS squelching. There are 16 color codes. So, when a DMR channel is configured, Tx and RX frequencies are listed as well as Color Code (CC), and TDMS time slot (TS1 or TS2). The UHF band is commonly used for DMR. Not all DMR radios support analog use. Also, two band radios are recent additions.

The amateur has to realize that the DMR system was not created for them and neither were the radios, until recently, it was made for business radio. In the setup of the talk groups, different networks evolved. First, Motorola set up MOTOTRBO, then DMR-MARC (Motorola Amateur Radio Club), which was for the amateurs.

It would be very laborious for a user to program his radio with the many channels and talk groups. This work has already been done by others and shared as regional code plugs. The code plug is a data file containing the elements to be programmed into the radio using a separate programming application. Programming software is available from the radio manufacturers, while code plugs online. A code plug is a file with a .rdt extension.

In Ohio, a good resource is the website of the Ohio Section of ARRL, arrl-ohio.org. In the home page is a header labeled DMR. Here you will find many resources for DMR radio, including code plugs for specific radios.

Once a basic code plug is installed, one can customize it to their personal preferences rather simply, by using the programming software, as the laborious work of programming individual channels is already done.

Then, one has only to upload the code plug to his radio using a programming cable available from the manufacturer.

One can, using the programming software, program any analog channel he wants to use in his radio. Remember—this is not made as a ham radio and frequencies can be programmed outside the amateur spectrum and the radio will accept them. It is up to the amateur to use only legal channels. When using other channels, such as marine or weather channels, be sure they are configured as receive only.

One last thing: to use the DMR system, you must become a registered user and be issued a DMR ID number, which you program into your radio and your code plug. It will not function on DMR without one. To register, go to dmr-marc.net.

Using DMR, the receiving radio display identifies the caller on the other end, either by call sign and name or by their DMR registration number. Like call signs, a user can look up identities in the published DMR database. Each time you key the mic, a packet is sent that includes the DMR ID and when using a repeater, that is what opens up the repeater, not the carrier. A DMR repeater has the ability to shut off a remote transmitter, for example to prevent interference while another is transmitting. It can also do it to enforce transmit timeout rules. What makes it possible for the repeater to transmit a command to the user radio while it is transmitting is by making use of the TDMA feature. It sneaks in the command outside the 32.5 ms time slot the radio is transmitting. There is never any static heard while in a digital mode. Unlike System Fusion and D-Star, DMR does not support APRS, although some radios can support GPS otherwise.

There is a published *Amateur Radio Guide to Digital Mobile Radio* available for download, it is found at <http://guide.k4usd.org>

If you really want to write your own code plug from scratch, you can do it using the programming software for your radio. There is a detailed presentation describing writing one for a TYT MD-380, a popular DMR HT. To download that, follow the link in arrl-ohio.org called DMR Code Plugs Explained.

Well, I lied. The system is complicated, however it doesn't have to be for the user. The code-plugs and programming software take care of most all of it. It is an amazing system.





The SPARK is the official newsletter of the Cincinnati FM Club and is published bi-monthly in anticipation of the bi-monthly Club Meeting at its normal meeting place: Mobilcomm, 1211 Sharon Rd, Cincinnati, OH 45240-2998. The Editor is Ken Irwin, W8LTT. Articles, suggestions and digital photos may be submitted to Ken via email at W8LTT@arrl.net, or by USPS at 358 Oliver Rd, Cincinnati, OH 45215-2615.

The deadline for the next edition is Monday, January 20 for material submitted for publication or copied from other sources. Articles may be edited for clarity and length.

Meeting schedule: Wednesday, February 5 at 7:30 PM. At Mobilcomm

The on-the-air meeting on 146.28/146.88 is at 2100 hours March 4, 2020.

BE SURE TO MARK YOUR CALENDARS!

Go to <http://cfms.us> for the latest news and the most recent edition of SPARK!

The Cincinnati FM Club

Club Station Call: WB8CRS

Monthly Meeting: First Wednesday, Even Months, 7:30 PM

Cincinnati FM Club
1211 Sharon Rd
Cincinnati, OH 45240-2916

CFMC Repeater System

"88" System

Location	GREENHILLS	MT. REPOSE	TAYLOR MILL	TAYLOR MILL	GREEN HILLS
Frequency	146.88	146.28	146.28	147.03	443.40
Offset	-0.6	R/O	R/O	+0.6	+5.0
Antenna Height	735 ft.	255 ft.	405 ft.	405 ft.	735 ft.
A.M.S.L.	1541 ft.	1130 ft.	1225 ft.	1225 ft.	1541 ft.
H.A.A.T.	825 ft.	334 ft.	496 ft.	496 ft.	825 ft.
Access Tone	PL 123.0 Hz	PL 123.0 Hz	PL 123.0 Hz	PL 123.0 Hz	DMR Color Code 1

EchoLink Node 809821



Please submit your dues NOW
For your 2020 CFMC membership renewal!

CINCINNATI FM CLUB

2020 Membership Renewal/Application

Please support the CFMC. Call Fred Ruzick, Membership Chair, with questions. Contact info below

NAME _____ New Member
CALL _____ LICENSE CLASS _____ Membership Renewal
ADDRESS _____ Repeater Code Request
(number and street) (city, state and zip) Amount Enclosed \$ _____ (\$0 if code request)
PHONE NUMBER _____
EMAIL _____

OTHER HAMS IN HOUSEHOLD (at same address)

NAME _____ CALL _____ LICENSE CLASS _____

NAME _____ CALL _____ LICENSE CLASS _____

I will follow the "CFMC Repeater Operation Practices" document dated 3/24/2009. It is available on the internet at http://cfmc.us/CFMC_Operating_Guide.pdf or by mail. By signing this form, I agree to abide by these practices and understand that adherence to these practices is a condition of continued membership in the CFMC and use of its repeaters.

SIGNATURE _____

DATE _____

Mail to: **Fred Ruzick, K8FR**
c/o Cincinnati FM Club
3257 Wheatcroft Dr
Cincinnati, OH 45239-6130
(513-741-8873 email k8fr@arrl.net)

2020 Membership renewals are due now.

RENEWALS: \$20 **Memberships lapse after January 1st. SPARK mailings continue through June**

NEW MEMBERS: \$10 Initiation + \$10 Dues = \$20 Total

(Please make check payable to **Cincinnati FM Club**)

EXECUTIVE COMMITTEE — CINCINNATI FM CLUB 2019-2020

President:	Bob Shokler	KD8JWN	931-2292	rshokler@cinci.rr.com
Vice-President:	TR Stoner	WR4T	474-5659	wr4t@yahoo.com
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Membership	Fred Ruzick	K8FR	543-4536	K8FR@arrl.net
Editor SPARK:	Ken Irwin	W8LTT	608-1898	W8LTT@arrl.net

Cincinnati FM Club Treasurer's Report .

January 13, 2020

Beginning Checking Balance	\$10,186.31
Expended Mobilcomm	32.10
Manor House	391.06
Stamps	11.00
VOA Speaker	150.00
Received Holiday Dinner	368.00
Membership Dues	180.00

Ending Checking	\$10,150.15

Respectfully,

Richard KA8HXR

CFMC Treasurer

Cincinnati FM Club
Meeting / Holiday Party
December 4, 2019

The Manor House Restaurant

Event time 6:00 – 9:00 PM EST

Business Meeting 7:30 PM

Attending :

Jack Dominic, speaker	Richard Turner KA8HXR
Bill Klykylo WA8FOZ and Dotty Feldis	Bob Conrad W8SCK and Nancy
Fred Ruzick K8FR and Carol	Dave Groen W8DRG and Debbie
Bill Laphorn KB8DG and Tondalaya KC8NDR	Jim Bunning KD8HXP and Michele
Ken Irwin W8LTT	Bob Crownover W3TFI
Barry Franz KC8KKC	Alllen Gerth WA8VBP

The business meeting was conducted by Bill Klykylo, CFMC Secretary. The treasurer's report and October and November minutes as published in the SPARK were accepted.

The speaker, Jack Dominic, Executive Director of the National Voice of America Museum of Broadcasting, gave attendees a multimedia program. This very effective and well-received presentation covered the history of local and national broadcasting, the VOA, and the Bethany Station. A lively discussion ensued! Thank you, Jack, for a great program.

Respectfully submitted, Bill Klykylo WA8FOZ

Cincinnati FM Club
On The Air Net Meeting
January 8, 2020

Call to order 9:00 PM EST

Check-ins

W9OBQ – Don (Net Control)	NG8P – Howie
KD8JWN – Bob	W3TFI – Bob
WA8FOZ – Bill	WA8VBP – Al (via Echolink)
KA8HXR – Richard	W8OUU – Jim
W8LTT – Ken	K8FR – Fred

Discussion topic: Future meeting programs

Net Closed 9:25 PM EST

Respectfully submitted, Bill Klykylo WA8FOZ



More Christmas Party pictures.



Mobilcomm History

Celebrating 75 years of Communications Service

Continued from December 2019 Edition of SPARK

Conrad Comsystems and Mobilcomm become one

Cyril became chairman of the board and I was president. Cyril agreed I manage the new company without interference from him. I decided to spend the first three months at the old Mobilcomm and not to start integrating our employees during that time. I found a lot of overtime and special work agreements with many employees. I unwound all the deals one at a time by meeting with them individually. In most cases, I increased their hourly wage so they could still earn the same amount without overtime pay. I insisted they could get all the work out without over time. About the end of March, I included a note in employee paychecks ending overtime – unless approved by Bob Meinerding or myself.

Cyril, Bob and I were out of the office that afternoon and we got back about 3:30 p.m. Fred Simon, our parts manager, was sitting outside on a stump. He said all employees walked out after receiving their pay checks with the overtime note in it. He didn't know what to do. I told him to lock up the building and we all went home. On Monday morning, I arrived at 6 a.m. and stood by the back door. I greeted each employee as they came in the door. Everyone came back and they knew they had a new boss.

Expedient Answering Service

I struggled with Expedient Answering Service. It just did not seem to fit our profile, and I could see technology advancing and killing our business. On New Year's Eve, my wife Nancy and I were driving home from a party. In our car I could listen to the girl in dispatch and we could hear a party going on in the background. This was strictly against company rules. Dispatch was in Northside and we were nearby, so I stopped and went up the back way to Cyril's office – which had a one-way mirror. What I saw wasn't good and cemented my desire to sell the answering service. I approached my former Tele-Page partner, Charlie Mefford, who owned Around the Clock Answering Service and ended up selling him the answering service for \$110,000 with payments spread out over five years – exactly matching what we had paid him earlier for Tele-Page. Charlie never missed a payment.

Back to the Greenhills property

In 1981, I decided to try again to get the road easement removed from the east side of the property on Sharon Road. I asked Maurice Wesselmann from the Hamilton County Communications Center and Wilbur Chaney from the county engineers for help. They had a direct connection to the county commissioners. Wilbur invited me to meet with the county engineer. I then found out there was an easements department and he directed me to the office. The department head told me they never cancel an easement because there may be a time in the future when they would want to use it. That encounter was very disappointing. I went back to the Hamilton County Park Board again and offered to donate to them our land that went down to Springdale Road adjacent to the park. In exchange, I'd get a letter recommending their approval. They turned me down again. Doubting my chances, I went ahead and applied for easement removal.



Wilbur Chaney & Maurice Wesselmann, Sr

Later, I received a letter telling me the commissioners would take up our request at their next meeting. Al Gerth and I went to the meeting only to find we were the only people there. The commissioners came out and read a letter from the park board recommending the easement's removal. The commissioners approved the move, stood up and walked out. It happened so quickly Al and I looked at each other in disbelief. We couldn't believe what just happened. I had no idea Wilbur Chaney had so much political clout. I do not believe the Greenhills building would have been built without Wilbur's help. He was my hero. With that, the land was ready for development.

Time to build

When we merged Conrad Comsystems had more than \$300,000 in the building account. Cyril quickly purchased three houses on Colerain Avenue and tore them down to increase the size of the parking lot. I got very concerned because we had the land in Greenhills, and I saw it as our future home. Cyril wanted instead to expand the Colerain location. This was discussed at a board meeting and voted 8-1 we expand the Colerain shop. I was instructed to work on plans for the expansion. I was already working on plans for Greenhills in the evenings. I just could not make sense out of expanding Colerain. I went back to the CTI board again and presented the problems I felt we would encounter if we added an addition to the existing Colerain building on the north side. The board voted again. Again, it was 8-1, favoring staying at Colerain. On the way home that night I pulled over to the side of the road and cried. What had I gotten myself into? The next day I walked next door to approach our neighbor to see if he would be interested in selling his house, which we needed for the expansion. His response stunned me. "I have been waiting for you and you're not going to get this property like you got the other three houses." I never pursued it further.

By summer 1982, the country was deep in a recession. Interest rates for real estate loans were 17 to 21 percent. I was at the Galbraith Road shop when Bud Kiefer, a customer and long-time friend came in to have his radio repaired. He complained he had no work and was afraid he would lose his equipment operators. I told him I had property in Greenhills where the trees and brush were so dense I couldn't find several concrete monument markers on the property. He insisted on bringing his loader out in the morning and would bill me at his cost just to keep his good workers from leaving his company. Finding those concrete monuments turned into clearing the whole property. Bud just kept clearing and things were happening.

I had been working with Peter Dirr, an architect located in the Greenhills Shopping Center. I went to grade school with his draftsman, Tom Reichert, and we were lifelong friends. Department by department, I had put together a ten-year future-needs projection. I mapped out needed areas and where to put them to maximize efficiency. My first concern was space for Mobilcomm and I determined they would need 14,400 square feet, or 120 feet by 120 feet. I felt the garage needed to be 120 feet by 100 feet. We had this profile laid out on the plot drawing. Peter didn't want to go any further until we had core soil samples. Bud kept asking where the building was going to go. He wanted to start digging the foundation. I started working around the clock trying to nail down the details and feeding information to Tom for the architectural drawing. The drawing was coming along nicely. I laid out a radio tower on the property with maximum guy wire length. Bud wanted to get started, so I took one last look at the building drawings. When I realized how much room the transmitter room and the maintenance area would take I realized I needed to add 20 more feet to the south side of the garage. To do this required rotating the building a few degrees to maintain the required 20-foot setback from the property line. When I presented this to Pete he got very upset. I said, "They're only lines on a piece of paper." He then got even more upset and Tom settled things down by saying he would re-do the drawing. Peter said he would produce a set of footer and wall drawings so I could get a permit but he still needed the core soil samples to determine if the ground could support the building. I brought the drawing out to Bud and we laid out the building. He started digging right away. By now he had a loader, a



bulldozer and two earth-moving pans on the site. Within about a week he had the hole dug out. It was 12-foot-high at the north end and ground level at the south end.

I went over to tell Pete we dug the hole and I needed the final footer drawing. His first words were, "You can't do that." I took him over to the site and he was in disbelief. He looked at the clay floor and said it looked good. The next day he finished the footer drawing.

Time for permits

Dave Moore was the Greenhills service director and building inspector. He said he would have to hire Forest Park to do the inspections since he had little experience with commercial buildings. I begged him not to do that. Forest Park's building department had a reputation of being hard to work with. He agreed to go ahead and issue the footer and wall permit, while he decided what to do. Dave did not end up hiring Forest Park which helped us keep the project moving.

I asked Steve Fishwick from Mobilcomm and Dave Patterson from Tele-Page if they would like to come to Greenhills and help me build the building. They agreed and we made a great team. Steve especially had a knack for knowing what to do and how to do it. We gave our customers priority as suppliers whenever possible. We had no general contractor.

Where is the money?

Things were happening fast and were intense and I had not approached a bank for a loan. We had a \$500,000 credit line at 12 percent interest with Fifth Third Bank for operational use only – not for capital expenses like building a building. We were approaching the limit on the loan when I got a call from our bank representative. He noticed we were getting near our limit and asked if I wanted to increase it to \$1 million. I told him I thought it may be a good idea and he agreed. As we approached the limit again, I got another call offering to raise it to \$1.5 million. As we approached the limit again, I got another call offering to raise it to \$2 million. I figured there would be no more calls increasing our credit limit so the goal was to complete the project with our remaining credit line.

Getting ready to move in

By late summer 1983, we were finishing up the drywall in the new Greenhills building - the building I had never gotten permission from the CTI board to build. I went to the board and wanted to sell the Colerain and Gordon Street buildings in Northside, plus a building we also owned in Hamilton. We rented Galbraith Road from my father. The board did not want to close the Northside shop because it was close to downtown and Northern Kentucky. My argument was we could put one or two more trucks on the road to cover those clients. My real reason was we needed the money and not the expenses. The board disagreed and voted again, 8-1, to keep Colerain.

It was time to paint the Greenhills offices, pick floor coverings and furniture. I asked Bob Meinerding to bring all personnel that would have an office out to tour the building and pick out how they wanted to set up their offices. I had a large tree stump that I used as a small desk on the second floor. I prepared envelopes for everyone with paint, furniture and carpet samples and a sheet to check off what they wanted. I laid the envelopes on the stump and after a tour I gave them their envelopes. They all went on their way to visit their new offices except Bob Meinerding was still standing there. He asked where his envelope was. I told him he would have to stay at Colerain because I had no one else to manage the Colerain shop. He started to walk away and then came back. I thought he was going to cry. He said it was probably a good idea to sell Colerain. With that I rolled back the stump and gave him his envelope.

Time to vote again

At the next board meeting, we voted to sell Colerain. The following morning Cyril set an envelope on my desk, said I need to read it and left the room. Prior to the merger Cyril had registered an agreement and two amendments with the Hamilton County Recorder. The agreement said old Mobilcomm could buy the

Colerain building from Howell's realty over a 15-year period. The agreement was in its 13th year. These were all disclosed prior to the merger. Two weeks before the merger, Cyril pulled one of the addendums and replaced it with a new addendum unbeknownst to me. This meant the new Mobilcomm lost all equity in the building. This surprise cost us about \$250,000 – money we desperately needed.

Time to face the banker

In August 1983, we moved Tele-Page into the second floor of the new building while we finished the first floor for Mobilcomm. We moved Mobilcomm in October. Money was very tight and we struggled to pay the \$20,000 per month interest payment on our \$2 million loan. In February, I got the inevitable call from our friendly banker. He said he hadn't visited us for a while and wanted to come out. I told him we had moved and gave him our Greenhills address. He was supposed to arrive at 9 a.m. Around 9:15, I decided to go looking and found him standing out front in the middle of the parking lot just staring at the building and tower. The first words out of his mouth were, "Don't tell me..." When it finally sunk in what the operational loan money was used for, he declared he would lose his job.

A week later, we were visited by a Fifth Third Bank vice president, our sales person, a rep from the building loan department, and a representative from their trust department to fix the mess their coworker created. They immediately laid out how they were going to fix this in their favor. They were going to switch the operational loan to a building loan with high closing costs and a much higher interest rate. They also wanted Mobilcomm's \$500,000 employee retirement fund moved to their trust department. I told them their interest rates were too high and they were asking too much. Plus, Fifth Third was not the only bank in town. The VP immediately asked if the other bank was "from up east." I bluffed and fired back, "How did you know?" He replied, "They've been approaching a lot of our customers." It seemed to get them worried.

The meeting was going nowhere so I finally told them the meeting was over, and they all froze. I got up and went to the door and shook their hands as they left. Al and Cyril followed them out to the parking lot and then came back into my office, furious I had treated the bankers so rudely. About a week later, the VP called me and wanted to bring everyone out again. Instead, I asked him to come out alone and he agreed. After discussion and some persuasion, he agreed to let the loan stand as-is in exchange for Fifth Third managing Mobilcomm's retirement account and a minimum \$50,000 running balance in our checking account. We also started paying the loan down. Because of this deal, I later estimated CTI saved about \$350,000 in fees and interest over the life of the loan.

Our entry into cellular

In 1982, we invested \$27,000 in an Indianapolis company applying for first round cellular licenses in five cities. The FCC started issuing licenses about 1986 in cities where all applicants could agree on ownership. Our investment group ended up getting the license for Indianapolis. After building the system, they sold it to Cellular One. Our share of the sale was \$550,000.

Selling Tele-Page

In early 1987, we were approached by a company from Pennsylvania to sell Tele-Page. They were buying up RCCs from all over Ohio and into other states. We couldn't believe they didn't understand the impact cellular was going to have on paging. We could negotiate a premium rate per pager because they wanted to use us to help sell them to the banks for their loan. We made sure we all wore suits when the Pennsylvania-based company came in and they liked us and our building. In October 1987, we entered into an agreement. They needed approval from the Ohio Public Utilities Commission before they could close. Nancy Long was president of Tele-Page and expected it to take about five months before they could close. They expected to close within six weeks. We made a daring decision to buy about \$300,000 worth of new pagers and give them

away in exchange for a two-year contract. This would increase the sale price from about \$8,000,000 to over \$10,000,000. It was risky, but we went for it.

They were expecting to close in December; we were expecting February. February came and went and so did March, and we were getting very worried the deal would fall through. By April our cash was down to nothing and our accounts receivables were at rock bottom. We had no place left to go for cash. In mid-April, on a Thursday, Nancy Gleason informed me we would not be able to meet payroll the following Tuesday. We had managed to barely cover the last two payrolls but this time there was no more cash, anywhere. On Friday, we determined if about half the stockholders would be willing to let us hold back their paycheck we should be able to squeak through. I planned on meeting with them on Monday. About 4 p.m. Friday Nancy Gleason came into my office. She got a call from the bank and they wanted to know what to do with a \$10 million wire transfer. I said, "Put it in the checking account. We have some bills to pay."

Deciding six months earlier to purchase the additional pagers literally paid for our building. Also, the premium price we received, which was almost double the going rate, was because of our building and our willingness to present a professional and successful business to the banks. We would not have been able to accomplish this feat without Nancy Long's key insights, hard work and playing the game to perfection.



Nancy Long

To be continued in the April 2020 edition of SPARK . . . Our entry into the SMR business.