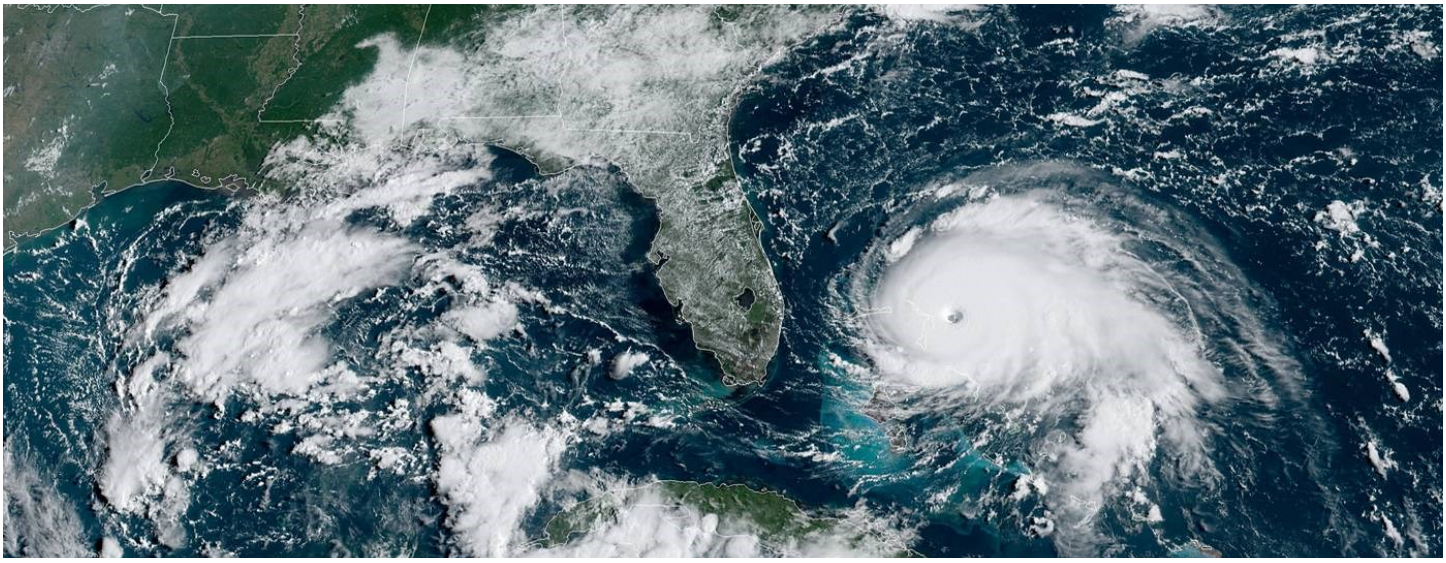


GOES-16 image of Hurricane Dorian taken Sunday morning, Sep 1, 2019.

Wavelengths

Xenia Weather Amateur Radio Net
XWARN (W8XRN)

Sep 2019

147.1650+ (123.0) (Analog Only)
443.1000+ (123.0) (Analog + System Fusion)

Meetings: 2nd Monday, 7:30PM, Greene Memorial Hospital (1141 N Monroe Dr, Xenia, OH) Herman Menapace Auditorium

President's Message

I can't believe it is September already! Fall is approaching. Kids are back in school. And, of course, the Air Force Marathon is coming up in a couple of weeks. Our own Membership Chair, Phil Verret KA8ZKR, is heading up this major task and it is sure to be a great one.

Also, Saturday, October 5th is the Ohio Simulated Emergency Test. The SET is conducted by the Greene County Amateur Radio Emergency Service. You do not need to be a member of ARRL or GCARES to participate. If you are not aware of any of the details of this exercise, don't worry — tune into the XWARN 147.165 (+123.0) repeater on the Saturday morning and see what happens. I encourage all to join in.

See you at the meeting on September 9th.

73, Elizabeth Klinc KE8FMJ

Why I do Public Service Events

Have you ever wondered why we should participate in public service events on a regular basis? Or why we should check into local nets? Or why we should volunteer to be net control on those local nets occasionally?

On the evening of May 27, 2019, I was out and about, but I was aware the area was expecting a bit of severe weather. So, when I got home, I quickly prepared for a weather net. I delayed starting a weather net until it was obvious the National Weather Service (NWS) would soon be issuing a severe thunderstorm warning for Greene County. At 9:50 pm I began taking check-ins. It became clear to me I was not the only one who was aware the weather was beginning to look dangerous. I had 20 initial check-ins.

As the evening wore on and reports began to come in of large trees down, large hail, funnel clouds, and tornados on the ground I realized Greene County was in trouble. I began to think of my family that go to bed early and would not be aware of the situation. While taking reports on the net I called some family members to ensure they were awake and aware of the situation. I soon realized the best thing I could due to ensure the safety of the residents of the County, including my family, was to get the reports of funnel clouds and tornadoes to the NWS in a timely manner so warnings could be issued and people would have time to get to a safe place.

Over the next few hours, I had 10 more check-ins from around Greene County. I had three separate liaisons working with me to get the information to Dayton Skywarn. The first two liai-

(Continued on page 2)

Club Contacts

- Liz Klinc, KE8FMJ
  President@xwarn.net
- Vice President, Bob Baker, N8ADO
  Vicepresident@xwarn.net
- Secretary, Jason Bowman
  secretary@xwarn.net
- Treasurer, Steve Mackey, N8ILR
  Treasurer@xwarn.net
- Repeater Guru, Jim Simpson, WB8QZZ
  Technical@xwarn.net
- Web Master Josh Long, W8KDL
  webpresence@xwarn.net
- Membership, Phil Verret, KA8ZKR
  membership@xwarn.net
- XWARN Trailer / Public Service,
  Mike Crawford, KC8GLE
  trailer@xwarn.net or
  publicservice@xwarn.net
- Newsletter, Jason Bowman, WG8B
  newsletter@xwarn.net

Nominations for 2020

Nominations are coming up next month for 2020. Just a reminder that I will not be running for Secretary this year. But as my energy level to do the job wanes amongst increasing commitments elsewhere, we may have an energetic member lined up to take the helm. Just a reminder that incumbents running unopposed do not require a nominations process according to our latest Code of Regulations (Bylaws).

Jason Bowman

Secretary, XWARN

August Program

I will present a review of the Event binder ("Playbook") from the Pan Ohio Hope Ride. This is a large event and the binders proved to be useful tools.

Bob Baker, N8ADO

Why I do Public Service Events

(Continued from page 1)

sons had to leave the net. One had wind damage at his home and the other to help the Beavercreek Fire Department. Due to the weather conditions there were several issues with quality of transmissions at times, not to mention the Dayton Skywarn weather net was almost overloaded with reports. This presented an issue with transmitting important and sometimes urgent information to Skywarn and thus on to the NWS.

After speaking with several folks I knew were listening that night, even if they didn't check in, I realize one thing we didn't do that night was to remember to keep all transmissions, including mine, as short as possible. We reported unnecessary items, such as heavy rain, lightening, thunder, etc.

So why should we participate in public service events? To practice proper radio protocol and to learn to listen to instructions from net control. The time to practice radio skills is NEVER during an actual emergency. If not for volunteering for many public service events I would not have been ready for the speed with which some of those reports came. I could have been completely flustered and overwhelmed. But because of my training with public service events I was able to accept the reports and give precise, clear, information to the liaison to pass to Dayton Skywarn and thus onto the NWS.

(Continued on page 5)

What's in a Name? Or a Coordinate?

'Tis but thy name that is my enemy;
Thou art thyself, though not a Montague.
What's Montague? It is nor hand, nor foot,
Nor arm, nor face, nor any other part
Belonging to a man. O, be some other name!
What's in a name? That which we call a rose
By any other name would smell as sweet
— Juliet Capulet

Editor's Note: I had completed this article before Janise had sent me hers. A little act of serendipity I guess. Here may lie a partial solution to efficiently communicating location information over weather nets. I will have additional thoughts in a subsequent newsletter.

What's in a name, you say? Or a coordinate system? Mentioning your favorite coordinate system or method for specifying a location on the Earth's surface is a good way to pick a fight. But they are just different ways of specifying the same point.

In amateur radio, Maidenhead gets used frequently in DX'ing. In APRS, it's plain old latitude and longitude. In land navigation, it's UTM or MGRS. For weather nets, it might be "on Fairfield near the Mall" or maybe even "the corner of Fairfield and Lakeview" (that's where the ALDI supermarket got smashed by the Memorial Day tornado). For future reference, that intersection is at (39.758904, -84.053588) in latitude-longitude coordinates.

There are some newcomers to this mess I want to talk about – What3Words and Plus Codes – because some of you might start hearing about them in emergency communications (emcomm) because the general public is starting to use them.

I first heard about What3Words a few years ago. I purposefully didn't write about it earlier because I didn't want to start that fight. But I knew it had potential applications in emcomm, and what changed my mind was an actual emcomm use in England between a group lost in the woods and the police during a call to their "911" called "999". From BBC (https://bbc.in/2zFhWs6),

> *Kicked. Converged. Soccer. These three randomly chosen words saved Jess Tinsley and her friends after they got lost in a forest on a dark, wet night. They had planned a five-mile circular stroll through the 4,900 acre (2,000 hectare) woodland Hamsterley Forest, in County Durham, on Sunday evening, but after three hours they were hopelessly lost.*
>
> *"We were in a field and had no idea where we were," the 24-year-old care worker from Newton Aycliffe said. "It was absolutely horrendous. I was joking about it and trying to laugh because I knew if I didn't laugh I would cry."*
>
> *At 22:30 BST they found a spot with phone signal and dialed 999.*
>
> *"One of the first things the call-handler told us to do was download the what3words app," Ms Tinsley said. "I had never heard of it."*
>
> *Within a minute of its download, the police said they knew where the group was and the soaked and freezing walkers were swiftly found by the Teesdale and Weardale Search and Mountain Rescue Team.*

(Continued on page 5)

XWARN Mission

The mission of the Xenia Weather Amateur Radio Net (XWARN) amateur radio club is to conduct weather spotting nets during severe weather and other communication services for the City Of Xenia and all other Greene County communities.

In this capacity, we are set up to provide communication services as required to the Greene County Ohio Public Service Agencies and other local government entities. The communications services provided to the supported agencies may be for emergency purposes or to simply enhance their communications abilities. On an as needed basis XWARN provides similar services to various government entities of our surrounding counties.

Additionally, XWARN provides communications support to various community organizations in support of marathons, 5K runs, 10K runs, bicycle events, etc. to provide health and safety assistance to the participants and sponsors of said events.

In support of these goals, XWARN operates and maintains amateur radio repeaters and other equipment in Greene County.

Minutes: August 12, 2019

Submitted by Bob Baker N8ADO

The meeting was called to order at 7:30 PM by President Elizabeth Klinc.

The meeting opened with the usual Pledge of Allegiance and introductions. 16 members present.

Janise Brooks moved to accept the minutes from the July meeting as published in the newsletter and Jim Simpson seconded. The motion passed 15 to 1.

The treasurer's report was presented. Highlights are that the shirts sales at Hamvention raised the second highest amount on record and there was discussion with general consensus that left-over sweatshirts would be offered to local customers only, to be picked up, sizes are limited, and that sales tax would be paid as this is not part of our tax-exempt fund raiser. Jim Beller moved to accept the report, Jim Simpson seconded, and the motion passed 15 to 1.

Bob Baker reported several upcoming Public Service Events: Abi-Khan Horse Challenge Aug 17, 18, Holiday at Home Sept 2, Air Force Marathon Sept 21.

Mike Crawford reported that a new entry step had been acquired for the trailer and that the trailer is due to be taken for bearing lubrication and brake service.

There was some discussion regarding the difficulty of finding a source of programming service for the repeater. This is an obstacle to getting the planned repeater upgrades finished.

Old Business:

No progress made on obtaining club shirts.

New Business:

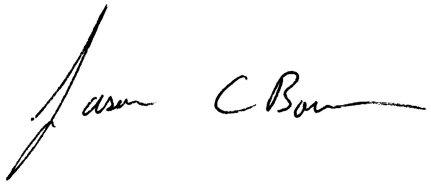
Phil Verret asked permission to use the XWARN 147.165 repeater for transmitting an information beacon during the Air Force Marathon. Bret Boggs (W8XRN trustee) granted permission provided that there is a mechanism to shut off the beacon should a problem arise and that the duty factor of the transmitter be limited to 50%.

Bob Baker asked if the group would consider moving the Christmas party to a new venue. He offered the suggestion of TJ Chumps in Fairborn. The reaction was positive and no negative responses were noted.

Bob Baker gave a demonstration of the use of FLMessage software that is used in conjunction with FLDigi to send information digitally over ordinary voice channels. This method has been adopted by many ARES groups and has found favor with Ohio ARES.

Jason Bowman

Secretary, XWARN



Why I do Public Service Events

(Continued from page 2)

Why should we check into local nets? Again, to practice radio protocol, to become familiar with our radios, and to learn to listen to instructions from net control.

Why should we volunteer to be the net control operator on the local nets? By now this should be familiar theme. PRACTICE, PRACTICE, PRACTICE!!! But not just radio protocol… Practice learning how to control a net. Generally, the local nets are scripted for the net control operator but still give you an opportunity to practice taking quick, concise, accurate notes. Local nets provide an opportunity for practicing passing information to others.

By doing these three things to PRACTICE your radio skills you will be ready to give accurate information in the event of an emergency. You will feel confident in your abilities as a "Professional" Amateur Radio Operator. And hopefully, you feel confident in running a net, not just for a local check-in net, or even a public service net, but for any kind of disaster or emergency!

Submitted by Janise, KD8DGB

Editor's Note: I was preparing a follow-up to Janise's article and realized I needed more time to do some research regarding some things she brought up as well as something Bob talked about recently in order to bring you a quality, fact-checked article. I might also be able to do an experiment to test some of my thoughts out and present that, but I'm not hopeful. Work is keeping me very busy these days, and it might get worse this month.

What's in a Name? Or a Coordinate?

(Continued from page 3)

But this wasn't the first time police have used the app with the public in England. There have been other occasions (https://bbc.in/2ZGpadS) such as a mother with a child who ran off a road in her car.

What3Words is literally 3 words that uniquely encode a 3m by 3m location anywhere on Earth. It was invented to provide a way of specifying a location for places that don't already have street addresses, which is a lot of places in un- and under-developed countries. Something like 4 billion people don't have an address.

Why not use latitude and longitude or any other coordinate system? If you take EC001 from ARRL, you will learn that communicating detailed information, e.g. long strings of numbers, via voice is VERY error prone and also VERY lengthy. And most coordinate systems have this problem for voice transmission. In doing research for this article, I went back to the comment section of the article that caused me to write about this. One commenter noted (http://bit.ly/2PBjmic) a high number of datasets he's personally looked at with serious transcription errors.

What3Words is designed for voice transmission and hand copying. The unfortunately proprietary algorithm for selecting words considers word length, distinctiveness, frequency, ease of spelling and pronunciation, homophones, and variant spellings such as color vs. colour. More memorable words are usually assigned to urban areas. The algorithm attempts to place similar-sounding 3-word combinations well away from each other to provide for both human and machine detection of transmission errors. Unfortunately, this means that it is impossible to know if two What3Words coordinates are near each other.

To better understand why it isn't a good idea to transmit detailed information via voice, imagine trying to read (39.758904, -84.053588) – the latitude and longitude coordinates near ALDI — over a phone call or radio. First, I bet most people wouldn't be able to get those coordinates from their smart phone. Second, try reading those coordinates off your phone to the operator, who you are speaking to using your phone. But I bet most people could remember "submitted.guiding.gums", the intersection near the ALDI in What3Words coordinates, communicate that to the operator,

(Continued on page 6)

What's in a Name? Or a Coordinate?

(Continued from page 5)

and the operator would transcribe it correctly most of the time.

Getting back to Janise's comments about being more efficient in communications during severe weather ...

Aside from conveying location information for people in distress, another possible use of What3Words locally is to report the location of damage during weather nets. While I'm not on many weather nets, I've noticed occasional difficulties when communicating the location of damage. While the National Weather Service doesn't need the kind of accuracy offered by What3Words, the net might benefit from the succinctness afforded by What3Words by making the frequency more available. It also avoids the ambiguity in communicating streets and intersections that naturally arises when either the spotter or net control is not familiar with the area.

If you want to have a go with What3Words, you can download the app, which is designed to work without the internet. When I downloaded it recently for Android, it was an initial 50MB downloaded with an additional 5MB for the American English language dictionary of words. Otherwise you can go to What3Words (http://bit.ly/2LhlhE4) from any computer and play with it online.

Not to be outdone, Google decided to get into this game of providing "addresses" for places without addresses, too. Google calls these "Plus Codes" (http://bit.ly/2ZyespV). "Plus" comes from Google's largely defunct effort to be like Facebook, and now nobody knows what it really is. To be honest, Plus Codes aren't very innovative, and there are some quirks involved. But even Maidenhead has a quirk.

Both Maidenhead and Plus Codes use the same approach as the old GEOREF (http://bit.ly/34hdD46) system. In a GEOREF-based system, pairs of coordinates are strung together to form increasingly accurate location representation. Each pair of coordinates represents a block of latitude and longitude. That previous latitude-longitude coordinate for the intersection near ALDI encodes as "86FQQW5W+HH". In Maidenhead, it would be "EM79xs" to much less accuracy, of course.

The main differences between GEOREF, Maidenhead, and Plus Codes are the size of the latitude-longitude blocks that are encoded and the base of the encoding for each pair. Plus Codes use Base-20 encoding for every pair whereas Maidenhead uses Base-24 for the lettered pairs and Base-10 for the numbered pairs, which is Maidenhead's quirk. I mean, why not just use the same encoding throughout? Well, actually, there was probably a good reason. Base-10 means that the subblock spans a nice even 1deg of latitude and 2deg of longitude. The net effect of the differences in encoding is that Plus Codes are about twice as accurate as Maidenhead for a 3-level coordinate, e.g. "BL11bh".

The first quirk of Plus Codes is that, in order to get the same accuracy as What3Words without too accurately specifying the coordinate (3m x 3m is good enough for the intended use case), you have to add a 6th "pair", which is actually just a single encoded character not a pair. So that previous Plus coordinate might look like this – "86FQQW5W+HH6" (a "6" was added at the end) – if What3Words accuracy is desired.

A second quirk of Plus Codes is that, unlike GEOREF and Maidenhead, the northing coordinate is specified first then the easting coordinate. Talk about potential for confusion!

A third quirk of Plus Codes is that a "+" symbol is placed after the 4th pair to act "as a delimiter to aid with visual parsing." Personally, I think that's just marketing hype to get the "+" symbol in there somewhere.

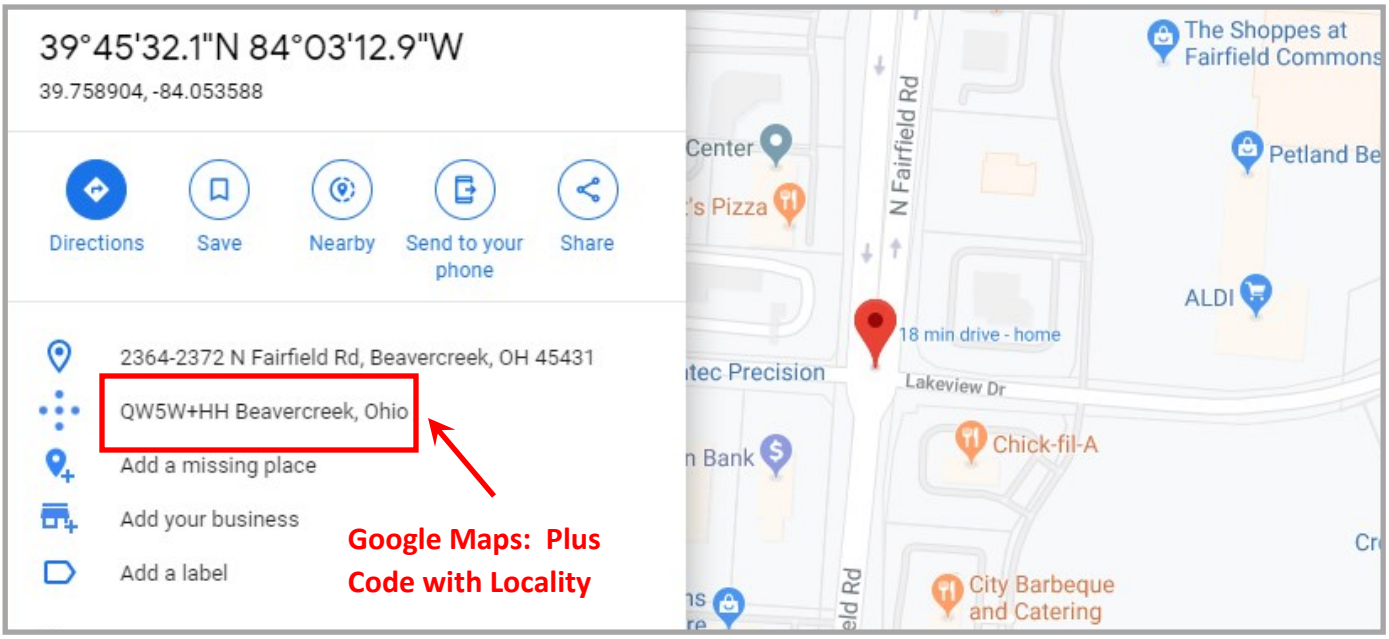
A fourth quirk of Plus Codes is that you might also see a shortened version such as "QW5W+HH Beavercreek, Ohio". Google allows you to specify a shortened Plus Code if you also specify the locality. If you specify this shortened version without the locality, Google will assume you mean your current locality.

Like latitude and longitude, Plus Codes are not ideally transmitted by voice and copied by hand. Plus Code are best transmitted by machine-to-machine process in my humble opinion. However, if you're going to do that, why not just use latitude and longitude? Well, that's probably Google being Google.

If you want to play with Plus Codes, you can go to https://plus.codes. Or, if you do any search in Google Maps on the desktop, a Plus Code will appear on the left-hand side after clicking on a search result. It works pretty much the same way in the Google Maps smart phone app.

Although I'm still not sold on What3Words, it certainly is the better method for transmitting coordinates by voice and copying by hand.

Jason Bowman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39.758904, -84.053588
Directions
Save
Nearby
Send to your phone
Share
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QW5W+HH Beavercreek, Ohio
Add a missing place
Add your business
Add a label
Google Maps: Plus Code with Locality
The Shoppes at Fairfield Commons
Center
Petland Be
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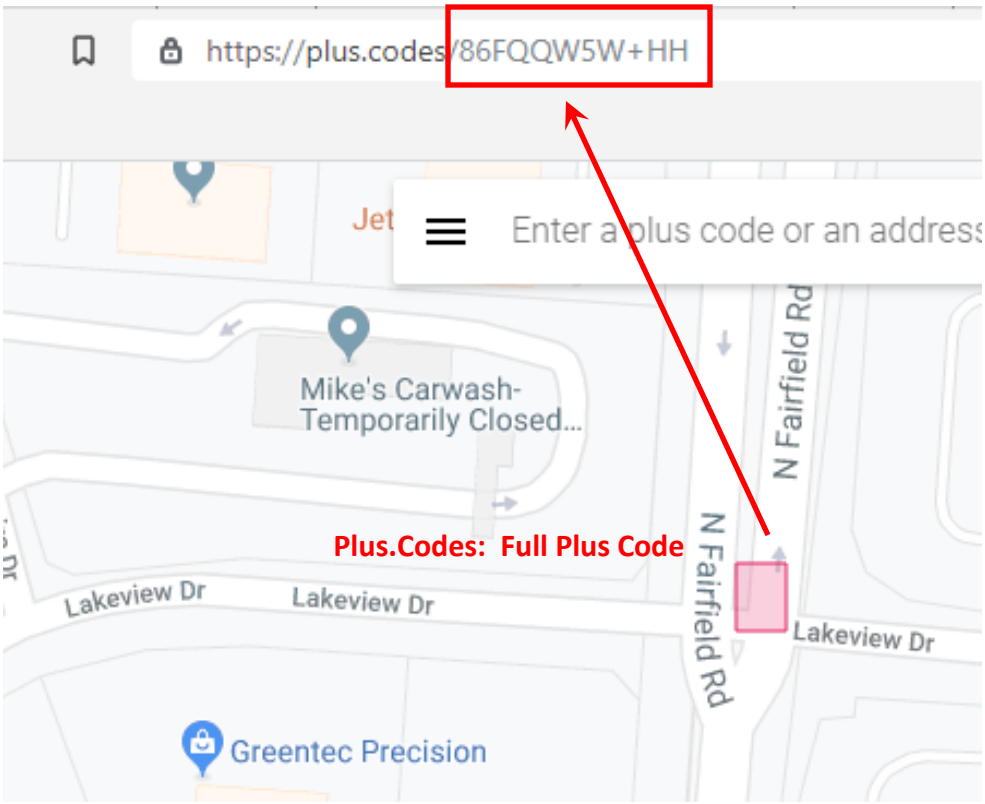
N Fairfield Rd
ALDI
18 min drive - home
tec Precision
Lakeview Dr
Chick-fil-A
n Bank
City Barbeque and Catering


https://plus.codes/86FQQW5W+HH
Enter a plus code or an address
Mike's Carwash- Temporarily Closed...
N Fairfield Rd
Plus.Codes: Full Plus Code
Lakeview Dr
Lakeview Dr
Lakeview Dr
Greentec Precision

The Waffle House Index?

In keeping up with the latest news on Hurricane Dorian, I came across this little gem.

Yes, the Waffle House Index (http://bit.ly/2IA9UN7) is a thing. FEMA uses it unofficially to describe the amount of damage an area has received and how well it's recovering. Apparently Waffle House is somewhat famous for being prepared for disasters with limited menus and generators and gives a general indicator of the state of an area.

According to former FEMA director Craig Fugate, the creator of the index,

> *Waffle House became almost like a rough guidepost. If it was open and had a full menu we probably weren't in the worst-hit areas yet … If you're across any area that's got Waffle Houses after a big storm they're generally going to be the first ones open and the last ones to close.*

The index goes as follows:

- Green: full menu – restaurant has power and damage is limited or no damage at all.
- Yellow: limited menu – no power or only power from a generator, or food supplies may be low.
- Red: the restaurant is closed – indicating severe damage or severe flooding

Hurricane Hunters

In the United States, there are generally three types of aircraft that fly into hurricanes to gather data — the NOAA WP-3D (http://bit.ly/2lHVZEU), which is a version of the Navy's P-3 heavily modified with radars, dropsondes, and other weather instruments suitable for low to medium altitude data gathering; NOAA's Gulfstream IV-SP (http://bit.ly/2jPSr2Q), which is suited to high altitude data gathering; and the USAF WC-130 (http://bit.ly/2ll84jd), which is similar to the WP-3D.

Did you know that there are only two WP-3Ds and that they are affectionately called Ms Piggy and Kermit? Did you know that the Gulfstream IV is called Gonzo?

The NOAA mission is fundamentally different than the USAF weather mission. NOAA's goal is more about research whereas the USAF mission is more about gathering data to help forecast intensity and track. However, the NOAA data is also useful for this purpose, too.

I saw some amazing pictures coming out of flights into Hurricane Dorian from both the WP-3D and WC-130. Both photographed a relatively rare phenomenon — the stadium effect. Only present in strong storms, the stadium effect is when the diameter of the eye wall increases with increasing altitude

(Continued on page 10)

Hurricane Hunters

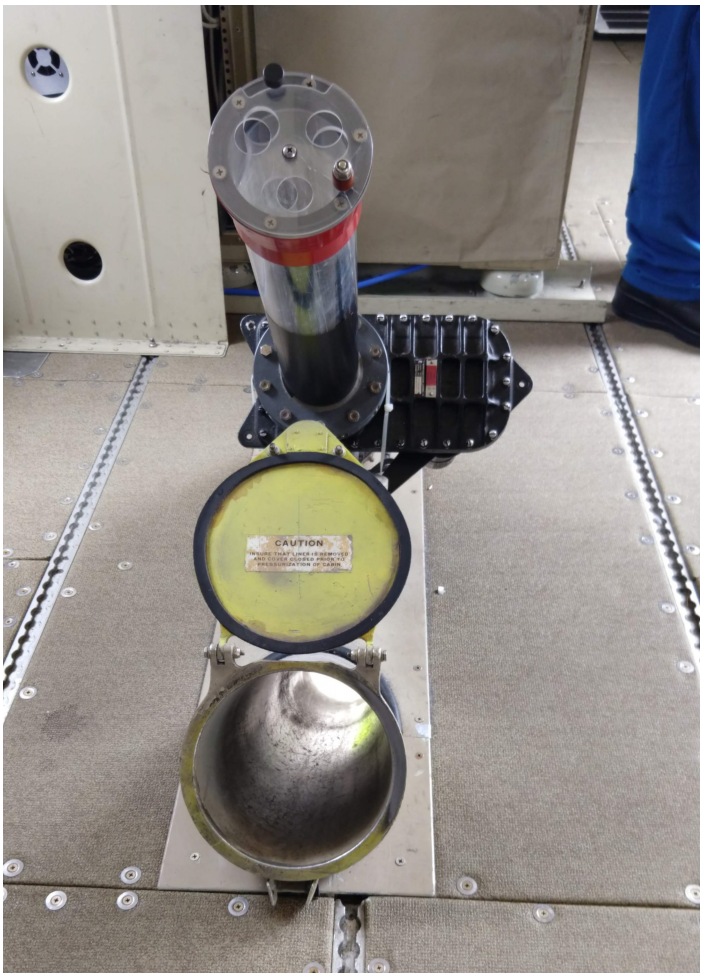
making it look like you are in a stadium.

Kermit was at EAA AirVenture this year. See last month's newsletter about that event, including two amateur radio special event stations! Like a bomber or fighter aircraft that score kills, the WP-3Ds have hurricane icons painted on them representing what hurricane flights they have supported.

Another interesting fact is that the company who developed a small, tube-launched drone for the program that is my day job is now developing that drone to support NOAA weather research and will be launched from the WP-3Ds. There's actually a tube large enough in the back of the WP-3D, and I believe they will be using that portal.

We expect the initial modification effort to take about a year. The main benefit in using a drone is that this particular one can fly for about 4 hours and 150+ miles away (radio range) from the WP-3D whereas the dropsondes they use may have about 5-10 minutes of "flight" on a drogue chute before impacting the water straight down, and the WP-3D needs to stay relatively close. NOAA will be able to gather much more data this way. For the radio enthusiasts, the weather payload transmits in the low 400MHz range.

Jason Bowman

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VIC
CENT
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«CITY», «STATE» «ZIP»

Wavelengths

Wavelengths is published monthly by the Xenia Weather Amateur Radio Net. Our meetings are currently held on the 2nd Monday of each month at **7:30 pm** at the Greene Memorial Hospital Auditorium. You can find additional information about our organization at www.xwarn.net . We welcome new and experienced Amateur operators and those interest in becoming an Amateur operator to attend our meetings.