



## News from



## The GLORIOUS SOCIETY OF THE WORMHOLE

September 2018

### Hello Worms

Hi Worms,

Happy September! Talk-in is on the Wormhole repeater system. For those coming to the meeting who cannot hit the repeater we will also monitor the Honeywell club repeater on 443.050 +141.3. Speaking of Wormhole repeaters, for those who have been spending time under a rock, the Worm 6M repeater has been on the air since August 10<sup>th</sup>. 53.150Mz, -1Mz offset and a tone of 146.2. The ground level there is 18ft. The mast is 20ft and the building is a guesstimated 32ft so the bottom of the antenna is somewhere around 70ft above sea level.

My thanks to the Worms who made this happen by donating both time and material. I will not mention names because I would inevitably forget someone.

Bring a folding chair for the meeting if you have one.

### **\* ANNOUNCING THE 2019 LIGHTBULB QSO CONTEST \***

2019 Lightbulb QSO contest, March 9th 20:00 UTC through March 10th 20:00 UTC. We've all heard the stories.....Joe Elmer was so good at antenna matching that he made a 100 mile 20M QSO on an ordinary 100 watt household lightbulb. So here is your chance to try it out. Go traditional and compete with just a lightbulb dummy load. Or, get creative and invent an antenna design that uses the lightbulb as a key component that makes your antenna work. Four categories of competition give you different paths to gaining bragging rights as TOP BULB in the 2019 Lightbulb QSO contest. Categories of competition are:

1. Household - an antenna constructed of any lightbulb available for purchase in normal home use applications.
2. Commercial/Industrial - an antenna constructed of any lightbulb available for purchase in commercial and/or industrial applications.
3. Homebrew - an antenna constructed of any home-made light bulb that radiates visible light when power is applied.
4. Dummy Load - any lightbulb that normally serves as a dummy load (see miscellaneous rules). Please note that the administrators do not recommend this category of operation because it puts both the operator and RF sensitive equipment in close proximity to the load. However, several, lightbulb purists wanted the category so here it is for entry at your own risk.

For additional information on how a lightbulb antenna works, click this link:

<https://hamsignal.com/blog/light-bulb-antenna-basics-and-faq>

Objective: The Objective of the Lightbulb QSO contest is to build and use an antenna constructed in a manner so that the lightbulb is a key component of the antenna and to promote understanding and practical application of antenna matching concepts that allow a lightbulb to be used as a radiator in two way radio communications.

Dates: Saturday, March 9th, 2019 20:00 UTC through Sunday, March 10th, 2019 20:00 UTC.

Bands of Operation: 160M, 80M, 40M, 20M, 10M, 6M

To see all the rules go to: <https://hamsignal.com/blog/the-lightbulb-qso-party>

**\* GOOGLE TRACKS USERS WHO TURN OFF LOCATION HISTORY \***

By Jane Wakefield Technology reporter 14 August 2018

(Editors Note: This was in the newspaper on Sunday the 19<sup>th</sup> so it is now generally known but I thought there might be those who do not get the newspaper interested so I left it in. Bill)

Google records users' locations even when they have asked it not to, a report from the Associated Press has suggested.

The issue could affect up to two billion Android and Apple devices which use Google for maps or search.

The study, verified by researchers at Princeton University, has angered US law-makers.

Google said in response that it provides clear descriptions of its tools and how to turn them off.

The study found that users' whereabouts are recorded even when location history has been disabled.

For example:

- Google stores a snapshot of where you are when you open the Maps app
- Automatic weather updates on Android phones pinpoint roughly where a user is
- Searches that have nothing to do with location pinpoint precise longitude and latitude of users

To illustrate the effect of these location markers, AP created a visual map showing the movements of Princeton researcher Gunes Acar who was using an Android phone with location history turned off.

The map showed his train commute around New York as well as visits to The High Line park, Chelsea Market, Hell's Kitchen, Central Park and Harlem. It also revealed his home address.

To stop Google saving these location markers, users have to turn off another setting called Web and App Activity, which is enabled by default and which does not mention location data.

Disabling this prevents Google storing information generated by searches and other activities which can limit the effectiveness of its digital assistant.

"You would think that telling Google that you didn't want your location to be tracked by disabling an option called "Location History" would stop the internet giant from storing data about your location," writes security researcher Graham Cluley on his blog.

"It seems pretty sneaky to me that Google continues to store location data, unless you both disable "Location history" and "Web & App Activity.""

In response, Google told AP: "There are a number of different ways that Google may use location to improve people's experience, including: Location History, Web and App Activity, and through device-level Location Services.

"We provide clear descriptions of these tools, and robust controls so people can turn them on or off, and delete their histories at any time."

Following its research, [AP created a guide](#) to show users how to delete location data.

Presented with the evidence of the AP study, Democratic senator Mark Warner accused technology companies of having "corporate practices that diverge wildly from the totally reasonable expectation of their users".

Democratic congressman Frank Pallone called for "comprehensive consumer privacy and data security legislation".

In the UK, a spokesman for the Information Commissioner's Office told the BBC: "Under the GDPR and the Data Protection Act 2018, organisations have a legal duty to be open, transparent and fair with the public about how their personal data is used.

"Anybody who has concerns about how an organization is handling their personal information can contact the ICO."

Technology firms are under fire for not being clear about privacy settings and how to use them. In June, a report from the Norwegian Consumer Council found evidence that privacy-friendly options are hidden away or obscured.

Location-based advertising offers big opportunities to marketers. According to research firm BIA/Kelsey, US brands are poised to spend up to \$20.6bn (£16.3bn) on targeted mobile ads in 2018.

Since 2014, Google has let advertisers track the effectiveness of online adverts with a feature based on footfall data, which relies on location history.

## **\*US MILITARY BANS FITNESS TRACKERS\***

INFOPACKETS by John Lister on August, 8 2018

The US Department of Defense (DoD) has banned military staff from using geolocation tools such as GPS-enabled fitness trackers in "operational areas." The move follows fears such data could be unintentionally public and threaten security.

Earlier this year fitness tracker company Strava published a worldwide map showing the most popular routes for its users to run and carry out other exercise activity. The map showed routes in increasing levels of brightness depending on their popularity.

### **Middle East Bases Unintentionally Mapped**

Several users then spotted several routes in countries such as Afghanistan and Syria. Given those aren't exactly leading markets for Strava, it wasn't hard to figure out the locations in questions were US military bases. While some of the routes were likely soldiers running recreationally, others appeared to have been heavily used because they were where soldiers were patrolling a base.

The maps presented a couple of possible security risks. One was that even where it was known that a particular location was a military base, the routes could reveal details about the arrangements of buildings inside the base. Another was that enemies could spot popular routes around the base where soldiers would run.

### **Pentagon Has Own Phone Rules**

The DoD launched a review which has now led to the ban on geolocation tools. The ban is specifically worded to cover geolocation features rather than name specific devices, meaning it won't become outdated. Local commanders will have the authority to decide what devices can and can't be used. (Source: [defenseone.com](http://defenseone.com))

The Pentagon will be excluded from the ban, despite technically being an operation area. However, the facility already has tech security rules that mean staff must put phones in a special storage unit outside the main Pentagon building whenever discussing classified or sensitive issues. That's designed to combat the risks of phones being remotely hijacked to use the microphone or camera to record and relay sound and video. (Source: [bbc.co.uk](http://bbc.co.uk))

## **\* THE AFFECTS OF GROUND IN THE REACTIVE NEAR FIELD FOR VERTICALS\***

Ralph WD0EJA

I have been publishing this technical article since January of 2013. For the past 38 years I have manufactured the Isotron Antennas. This also involved helping many with their very difficult installations. Some of the information will be from what we learned solve these problems. Some information will be right from a text book or credible article. You are welcome to contact me at [wd0eja@isotronantennas.com](mailto:wd0eja@isotronantennas.com) with question you may have.

Last article dealt with dipoles and the affects of the ground under the antenna. A vertical is affected more by the earth underneath it. Why?

Using a 1/4 wave mono-band vertical as an example, you have only 1/2 of your antenna. Where as the dipole has both halves. With half the antenna gone, the vertical by itself is not resonant on the band it is intended for. So what do you do?

Mount it on the ground and use the earth as the other half. However, can you picture a 1/2 wave dipole with one side of fine copper wire and the other side made of dirt? The dirt will conduct, but not with near the conductivity as the copper. Apply this to your vertical. If it is mounted on the ground with no radials, the RF current is being conducted through dirt. At best it is a poor conductor. So, how can it be improved? Radials.

There are a variety of radial designs. For ground mounted verticals the most affective radial system is a metal mesh. How big do you make it?

For a mesh, it does not necessarily need to be 1/2 wave out like a broadcast radial system. It will vary with installation, but a much shorter radii will work. Laying down a mesh that fits your real estate will no doubt improve your vertical system. You will want to concentrate on being sure the antenna is resonant in the band you are operating. This will be indicated by a minimum dip in SWR as you scan the band. You most likely

will find the minimum is not 1:1. This is due to the nature of a vertical where the Radiation Resistance is below 50 ohms. This however, is a minor mis-match on the HF spectrum and can be matched with a tuner. Wire radials can be done in a variety of ways. Lots of 1/4 wave radials on the ground or just below ground reduces ground losses drastically.

If you are elevating the vertical, 4 radials do a good job. However, now you need enough height to reduce the ground losses much like a dipole.

Do you need a full 1/4 wave radial? It would be nice, but not always practical.

How about 16 radials at a .1 wavelength with a full 1/4 wave vertical? Radials are spaced at 22.5 degrees. Power loss is estimated at 3db. This is like 1/2 S unit from full efficiency. It will also come close to 52 ohms.

This information is to help get you started. Now you can look at your lone vertical, hold up your thumb and devise a ground system that may improve your performance.

73,  
Ralph WD0EJA  
AUGUST 2018

### **\* SKYPE NOW HAS END TO END ENCRYPTION\***

*ZDNET* By Mary Jo Foley | August 20, 2018

In January 2018, Microsoft officials said they would be offering end-to-end encryption for Skype consumer. As of last week, it seems that this encrypted-conversation option is now available to all Skype users running the latest version of the service, as noted by [MSPoweruser.com](http://MSPoweruser.com).

Microsoft originally started rolling out its end-to-end encrypted Private Conversation capability to testers in January. At that time, officials said this encryption would work for audio calls, text messaging and image, audio and video file transmission using the industry standard Signal Protocol from Open Whisper Systems.

As was the case during the test period, the Private Conversation feature only works for a single conversation per device at a time. But the feature does work on all Skype consumer variants -- Windows Desktop, iOS, Mac, Android and Linux.

To use Private Conversation, users can select that option from a recipient's profile or the compose menu in order to generate an invitation. During that conversation, calls, messages and image/audio/video transmissions are encrypted until the session is ended.

Microsoft has been touting Skype as being encrypted for some time, noting it uses 256-bit AES encryption. But this isn't the same as end-to-end encryption. End-to-end encryption means not just the communication channel is secure but the messages stored on servers can only be read by those involved in the communications.

In other Skype news, Microsoft is testing a new "SMS Connect" feature that will allow users to send and receive SMS messages from the Skype app on their PCs or Macs, as reported last week by WindowsCentral.com (via Windows Blog Italia). The setting for turning on SMS Connect could be seen in Skype Preview on Android last week.

In addition, the promised Skype call recording capability is starting to roll out to Skype consumer users, starting with Android. The Skype app across various platforms will allow users to start/stop call recording and make it available to others.

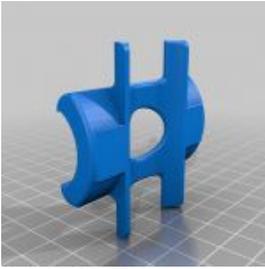
## **\* 3D PRINTED PARTS FOR HAM RADIO\***

By Dan Romanchik, KB6NU

One of the things that I keep telling myself that I need to learn how to do is 3D printing. This morning, I ran across a couple more 3D printing projects for ham radio that I thought I'd pass along.

The first I found on reddit: 3D Printed Parts for Portable Tape Measure Yagi Designs ([https://www.reddit.com/r/amateurradio/comments/963br3/3d\\_printed\\_parts\\_for\\_portable\\_tape\\_measure\\_yagi/](https://www.reddit.com/r/amateurradio/comments/963br3/3d_printed_parts_for_portable_tape_measure_yagi/)). The summary on Thingiverse (<https://www.thingiverse.com/thing:3042505>), which is a website where "makers" share their designs, says:

These parts are made for use with 1-in. PVC pipe and 1-in. Harbor Freight tape measure steel. You can use electrical tape to attach the element holders to the side



of the pipe, and use the driven element bridge to give structural rigidity across the driven dipole element. I have used this with up to 5 elements on 2m with good success. When not using the antenna, just pinch the elements to remove them from the holders, and store them INSIDE the tube! you can add some end caps to make this ultra portable. Use these parts with any of the multitude of tape measure YAGI design guides online.

The element holders are attached to the boom with electrical tape in the photo above. While I haven't tried it, I'd suggest that the antenna might be a bit more robust if you could screw or perhaps glue the holders to the boom.

There are lots of other cool amateur radio 3D printing projects available on Thingiverse (<https://www.thingiverse.com/search?q=ham+radio&dwh=415b6d8da129c3c>).

Browsing through the list quickly, here are just two that look like they might be useful to me:

- Soldering Fingers (<https://www.thingiverse.com/thing:1725308>). This project looks simple and quick.
- $\mu$ Bitx Case (<https://www.thingiverse.com/thing:2925336>). I still gotta do something with the  $\mu$ Bitx I bought. This looks like it might get me started.

### **Finally getting in gear**

Last week, I attended a 3D printing class at our local maker space, All Hands Active ([allhandsactive.org](http://allhandsactive.org)), and now I feel like I can finally attempt a 3D printing project. I'm thinking about starting out with the simple Soldering Fingers project. If that goes well, I'll try a Raspberry Pic case and finally start using that in the shack. And, while these projects all seem pretty cool, I feel like I'm only scratching the surface.

Have any of you 3D printed anything cool for your ham radio projects? Is there another source of designs for ham radio 3D printed stuff besides Thingiverse?

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When he's not 3D printing enclosures for his ham radio projects, Dan blogs about amateur radio, writes exam study guides ([www.kb6nu.com/study-guides](http://www.kb6nu.com/study-guides)), and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him about your experiences with 3D printing at [cwgeek@kb6nu.com](mailto:cwgeek@kb6nu.com).

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## \*CLUB MEETING\*

The next club meeting is September 1<sup>st</sup>. We meet on the first Saturday every month at 11:00 Saturday morning at the Minnreg Building located at 6340 126th Ave N, Largo. Members are welcome to come in the rear area through the fence gate on the southeast corner of the property. Talk-in is on the Wormhole repeater system. For those coming to the meeting who cannot hit the repeater we will be monitoring the Honeywell club repeater on 443.050 +141.3. We will keep an eye peeled for you. We will take advantage of the cooking facilities with an after-the-meeting Social and Wormdog picnic.

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## \*CLUB NETS\*

Check in on the club net Thursdays at 1930. 442.625 + with a 146.2 tone or the 2M side at 146.850 – also with a tone of 146.2. We are always looking for volunteers to be the net control operator. Anyone interested, talk to one your club officers.

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**\*LOCAL NETS\***

**MONDAY**

1730 147.030 + Receiver sites and tone info <http://www.qsl.net/wd4scd/> St  
Pete Yacht Club ARC

1830 147.060+ no tone                      St Pete ARC daily net                      St  
Petersburg

1900 144.210 USB                      CARS, vertical polarization  
Clearwater

1900 147.135 +146.2                      Zephyrhills ARC  
Zephyrhills

2000 147.165+ 136.5                      Brandon ARS                      from  
Brandon

2000 50.135                      Pinellas ARK  
Pinellas County

2030 NI4CE system                      EAGLE Net, NTS traffic net, NI4CE  
system

2030 145.450                      Pinellas ARK  
Pinellas County

**TUESDAY**

1830 147.060 no tone                      St Pete ARC daily net                      from St  
Petersburg

1900 50.200 USB                      6M net  
Brandon ARS

1900 28.450 Clearwater		WCF section net	
1900 NI4CE system system		WCF Section VHF ARES	NI4CE
1930 145.170 & 442.4 both pl 156.7		Pinellas ACS net	Clearwater
1930 444.900 +141.3		Sheriff's Tactical ARC	Tampa
2000 NI4CE system system		WCF Skywarn net	NI4CE
2000 147.105+ 146.2 Tampa		Tampa ARC net	from
2000 28.365 USB ARS	simplex		Brandon
2030 NI4CE system system		EAGLE Net, NTS traffic net	NI4CE
2100 28.465 USB	10/10 net		from Orlando

### **WEDNESDAY**

1930 146.30 simplex net from Tampa		Hillsborough ARES/RACES	
1830 147.060 no tone Petersburg		St Pete ARC daily net	from St
1930 52.020 simplex Petersburg		Suncoast 6'ers	from St
1930 NI4CE system system		WCF Section Digital Info Ne	NI4CE
2000 147.105 146.2 Tampa		Greater Tampa CERT net	from

2000 146.97- 146.2 Clearwater	Clearwater ARS	from
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE
2100 NI4CE system affiliated	Tampa Bay Traders Net	non-

**THURSDAY**

1800 146.52 simplex Tampa	Hillsborough ARES/RACES	North
1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
1900 444.750 +146.2 Tampa	Fusion net	from
1930 146.850- & 442.625+ both pl 146.2 Petersburg	Wormhole	from St
1930 146.6385 -127.3 Lakeland	Lakeland ARC	from
1915 224.660- no tone Petersburg	St Pete ARC	from St
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE

**FRIDAY**

1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE

**SATURDAY**

0730 3.940 (7.281 Alt.)+/- QRM WCF	WCF Section HF Net	from
1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE

**SUNDAY**

0800 3.933	Florida Traders Net	non-affiliated
1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
1930 NI4CE system system	WCF Section Net	NI4CE
2000 147.550 simplex Pinellas County	550 Simplex Net	
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE
2100 144.210 USB orientation	Clearwater ARS	vertical

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**\*FOR SALE / WANTED\***

Anyone having something for sale or who might be looking for an item let me know. I will not print phone numbers or email addresses unless specifically told to since this newsletter might end up on the web. The exception is when I get the information off the web. If you are a member of the Wormhole then you have all the information you need on a club roster and if you are not a member .. why not? OK, if you are not a member you can contact me at the email address at the end of this newsletter, I will give you the information to contact the person involved.

**FOR SALE, all the following from Ray KD4HUW**

+Yaesu FT-857 with separation kit, MH-59 remote microphone, LDG FT\_Meter and LDG-YT tuner all for \$725.00  
+Icom AH-4 antenna tuner for \$175.00  
+Yaesu dual band Mobile Radio (ft-7900R) New-in-the-box (never opened) for \$265.00  
+Hustler antenna parts: Bumper mounting kit; 54" foldable mast with quick disconnect; Resonators RM-75, RM-40 and RM-15. All for \$75.00

**FOR SALE**, New MFJ TNC 1270X, never used in original box with manual and cables. \$30. Dean Sever W8IM

**FOR SALE**, Mosley TA-33M 10-15-20M beam with the 40M add on kit. Antenna is on the ground and in good shape. There are several parts that need replacement. The 40M kit is new in box. Antenna is broken down into six or seven feet sections so easy to handle. Asking \$300, talk to me, Bill AG4QX at arrl dot net or see me at the meeting.

**FOR SALE**, Cushcraft A4S 10-15-20M beam, on the ground. There are several parts that need replacement. Asking \$250, talk to me, Bill AG4QX at arrl dot net or see me at the meeting.

**FOR SALE**, 13 element, 14.5 ft 220 beam. Wormhole property, \$20, contact Bill AG4QX or any other officer. **Free to any Wormhole member or other club.** Pickup at Bill's house.

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**\*HAMFESTS\***

**September 22** Odessa, **Pasco County Hamfest**, Gunn Highway Flea Market, 2317 Gunn Highway, talk-In on 145.350 no tone, contact Don Nystrom , KA2KDP at 727-868-0176, the website was down last time I tried it. <http://sarfl.com>

**October 27** New Port Richey, **Gulf Coast ARC Fall Hamfest**, Millennium Academy, 10005 Ridge Road, **talk-in on** 146.67 no tone, \$5 includes tailgate, for more information goto <http://gulfcoastarc.org/2018/07/01/fall-hamfest-2018/>

**November 3** Lakeland, **LARC Hamfest** Revolution Church of Lakeland, 7315 Kathleen Road, Talk-In on 146.685 tone 127.3, For info contact Kevin Rought , N4KWR 863-393-4336  
<http://lakelandarc.org>

**November 10** Pinellas Park, **SPARCFest**, admission FREE, tailgate free, Freedom Lake Park, 9990 46th St N, Southeast corner of US 19 and 49<sup>th</sup> Street, Talk-in on 147.060+ no tone. VE testing at 0900. For more information go to <http://www.sparc-club.org/sparcfest.html>

**December 7 & 8** Plant City, the **2018 Tampa Bay Hamfest is the West Central Florida Section Convention, Friday and Saturday, at the Expo Building in the Strawberry Festival grounds, advanced admission \$9, at the door \$10, for information contact Bill Williams AG4QX, chairman@fgcarc.org or go to <http://www.tampabayhamfest.org> or you can just ask me, Jim or Dee at a meeting ;-)**

**2019**

**February 8-10** **Orlando Hamcation and State Convention**, Central Florida Fairgrounds, 4603 West Colonial Drive, Tickets \$15 in advance, \$17 at door. Talkin 146.4760 - no PL or D-Star 146.850 -, all the information at [www.hamcation.com](http://www.hamcation.com) or call 407-841-0874

**February 22 & 23** Tampa, **5th Annual TECHCON Convention**, Hillsborough County Emergency Operations Center, 9450 East Columbus Drive, talk-in on 147.105 + 146.2, for more info goto <http://arrlwcf.org/> or contact Darrell Davis at [kt4wx@arrl.net](mailto:kt4wx@arrl.net).

March 3 Punta Gorda, Charlotte County Hamfest, Punta Gorda Boat Club, 802 West Retta Esplanade, talk-in on 147.255 + 136.5, <https://www.prra.club/hamfest.html>

**May 25** **WormFest 2019, Pinellas Park, FREE, Freedom Lake Park, 9990 46th St N, southeast corner of US 19 and 49<sup>th</sup> Street, Park opens at sunrise for vendor setup, hamfest starts at 0800. Talk-in on 146.850 - 146.2. For a map and directions see <http://www.TheWormholeSociety.org> .**

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Mid January Frogman swim in Tampa Bay.  
<http://www.tampabayfrogman.com/>

Last full weekend January Winter Field Day, <http://www.sparhams.org/index.php>

Late January Gasparilla celebration

Late February West Central Florida Tech Conference  
<http://arrlwcf.org/wcf-special-events/wcftechconference/>

March/April MS Walks

March/April Mass Casualty Exercises

Late April Southeastern VHF Society Conference,  
<http://www.svhfs.org>

Late April March For Babies (was March of Dimes)  
<https://www.marchforbabies.org/Registration/Events>

Late April Florida QSO Party

Early to Mid May BikeMS Citrus Tour bike ride  
<http://www.citrustour.org/register.php>

Mid-May Annual Armed Forces Crossband Test

Mid-May Florida Hurricane Exercise

May, Memorial Day Weekend Wormfest

Early June	Museum Ships on the Air
Fourth weekend in June	Field Day
<a href="http://www.arrl.org/contests/announcements/fd/">http://www.arrl.org/contests/announcements/fd/</a>	
July 3/4	Midnight Run in Largo
<a href="http://www.kiwanismidnightrun.com/">http://www.kiwanismidnightrun.com/</a>	
August	International Lighthouse/Lightship Week
<a href="https://illw.net/">https://illw.net/</a>	
October, 3 <sup>rd</sup> weekend	JOTA, Scout Jamboree-on-the-AIR (around 14.280MHz)
Early December	ALS bike ride in Walsingham Park
December, first full weekend	Ride & Run With The Stars in Fort DeSoto Park
December, Second weekend	Tampa Bay Hamfest <a href="http://www.fgcarc.org/">http://www.fgcarc.org/</a>

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### **\*YOUR WORMHOLE OFFICERS\***

Bill AG4QX is President and editor of this newsletter, Treasurer is Jim KD4MZL, Paul KA4IOX is the Secretary, Dee N4GD is the Repeater Trustee and Mike K4ZPE is both our club Vice President and webmaster.

### **\*YOUR WORMHOLE REPEATERS\***

53.150 -1Mz PL 146.2

442.625 +5Mz PL 146.2

146.850 - 600Kz PL 146.2

The Wormhole repeaters are both now dual mode Yaesu DR-1X. FM analog as always and now Yaesu Fusion, a C4FM/FM digital mode.

The Wormhole website is at: <http://www.TheWormholeSociety.org>.

West Central Florida Section website: <http://www.arrlwcfc.org/>.

The ARRL website is at: <http://www.arrl.org/>

This newsletter is written for The Glorious Society of the Wormhole, an ARRL affiliated amateur radio club located around the Seminole section of Pinellas County Florida. Anyone wishing to be added or removed from The Glorious Society of the Wormhole mailings please write to me at the address below and they will be done.

73,

Bill Williams

AG4QX

ag4qx AT arrl DOT net