**The HIARC Bulletin**

October 2021 Edition

**The Official Newsletter of the Harris-Intersil Amateur Radio Club**

**Club Meetings:** Second Thursday of each month at Meemaw’s Barbecue on Babcock Street between Palm Bay Road and Port Malabar Road. Supper is at 5:30 PM, business is at 6:30 PM. Prizes at 7:00 PM. Our programs start at 7:15 PM. Meeting ends by 8:00 PM. As some members have allergies, we kindly ask that you refrain from wearing fragrances thanks.

**Club Station:** Building 15, Room 321.  E-mail Butchfor access.

**Repeaters:** K4HRS,145.47 Mc, tone 107.2 cycles, elevation 170 feet, Melbourne. Works good, repeater has sensitive receiver.

**Nets:**

The nets change often but here it is:

HIARC Emergency Net. Sundays 4:00 till 4:30 PM 145.47 MHz repeater

South Brevard Emergency Net (or whatever): Thursdays at 7:00 PM 146.85 MHz repeater

**HIARC Web Site:** <www.qsl.net/hiarc>. Website administrator; Jim , KC7SSW

**Officers:** President: Francis (“Butch”), WA4AQV

Treasurer: Pat KA4ZEC

Secretary: Open

Repeater Chairmen: Clyde KD8AN

Program Chairman: Open

Field Day Chairman: Open

Sunshine Chairman: Open

Club Jester: Ken N8KH

**Annual Membership:**

Annual dues are $12.00. Join at the meeting or send a check to:

HIARC Treasurer

Pat , KA4ZEC

We are on a calendar year dues system with annual dues due in June. Dues are prorated by a dollar a month so if you join in April they are $2.00 to get to June, or you can pay ahead thanks.

You can send me your email address to receive the newsletter: francis.parsche@l3harris.com

**Selected Hamfests:**

* October 8 and 9. Melbourne Hamfest. [www.pcars.org](http://www.pcars.org)

**Ham Radio Lunches:**

* Every Friday, 11:00 AM till 1:00 PM or so, Golden Corral on Palm Bay Road in Palm Bay. Around 12 people recently and growing.
* Once a month, the Saturday after the PCARS meeting, Sarno Restaurant and Pizzaria, 11:00 AM. Talk in 146.61 repeater. This is at the corner of Sarno Road and Croton Road.

**Sepetmber 9 HIARC Meeting Agenda:**

Our next HIARC meeting is this Thursday September 9 in the Babcock Street Meemaws Barbecue Banquet Room.

Agenda:

* Supper at 5:30 PM
* Business meeting at 6:30 PM
* Prize drawing at 6:50 PM
* Program at 7:10 PM:
* Vacate room at 7:50 PM

The program will be underground communications and buried antennas.

**Club Roster**

We’re making a club roster. Let me know one way or the other if you want your email published and your phone number published thanks.

**Melbourne Hamfest**

The October 8 and 9 Melbourne hamfest was a success. 850 tickets were sold. This about 50 percent more than last year. Before the virus from China attendance was 1100.

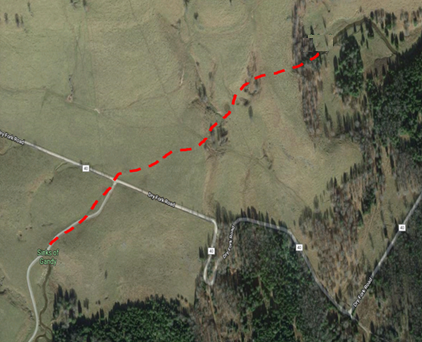
**New 6 Meter Repeater In Melbourne**

There is a new 6 meter repeater in the Melbourne area on 53.430 Mc PL 107.2 cycles, transmit is 1 Mc down at 52.430 Mc. It’s split site and not too high up yet.

Six meters has better propagation but more noise then two meters.

**Subsurface HF Communications**

A few years ago I decided to explore a wild cave in West Virginia. After studying the topo map it was clear my underground mission was going take two or more hours.



West Virgnina Wild Cave

This cave has TWO entrances as a stream both goes into and out of a mountain. So you go in one hole and come out the other, hopefully.



I was ready to go in but then it dawned on me: I would miss the 2100Z W1AW Bulletin down there! Fortunately I had packed a Yaesu FT-817 portable HF rig and wire for such emergencies.

Time for some engineering. The reception was area was going to be about 100 feet deep as a guess. 1 RF skin depth in moist limestone is nominally 0.005 mhos/meter standard earth. This calculates to 9 feet RF skin depth. So the reception at 100 feet was at 100/9 = 11 RF skin depths deep. 10 LOG10 (e11) is 47 dB of dissipation loss. Refractive loss at the surface varies with look angle but may have been 10 dB to W1AW as NVIS, some of a wave bounces back off the earth some goes in. Local magnetic near field induction loss for the receive dipole may have been 10 dB, as we did have an open airspace around it. So were are up to 47 + 10 + 10 = 67 dB of loss. At 6 dB/S unit signals underground might have 67/6 = 11 S units attenuation.

I decided to take my chances on W1AW and go in. One cave end was guarded by chiggers, moo cows and a one red fox. At least the moo cows and fox were cooperative.



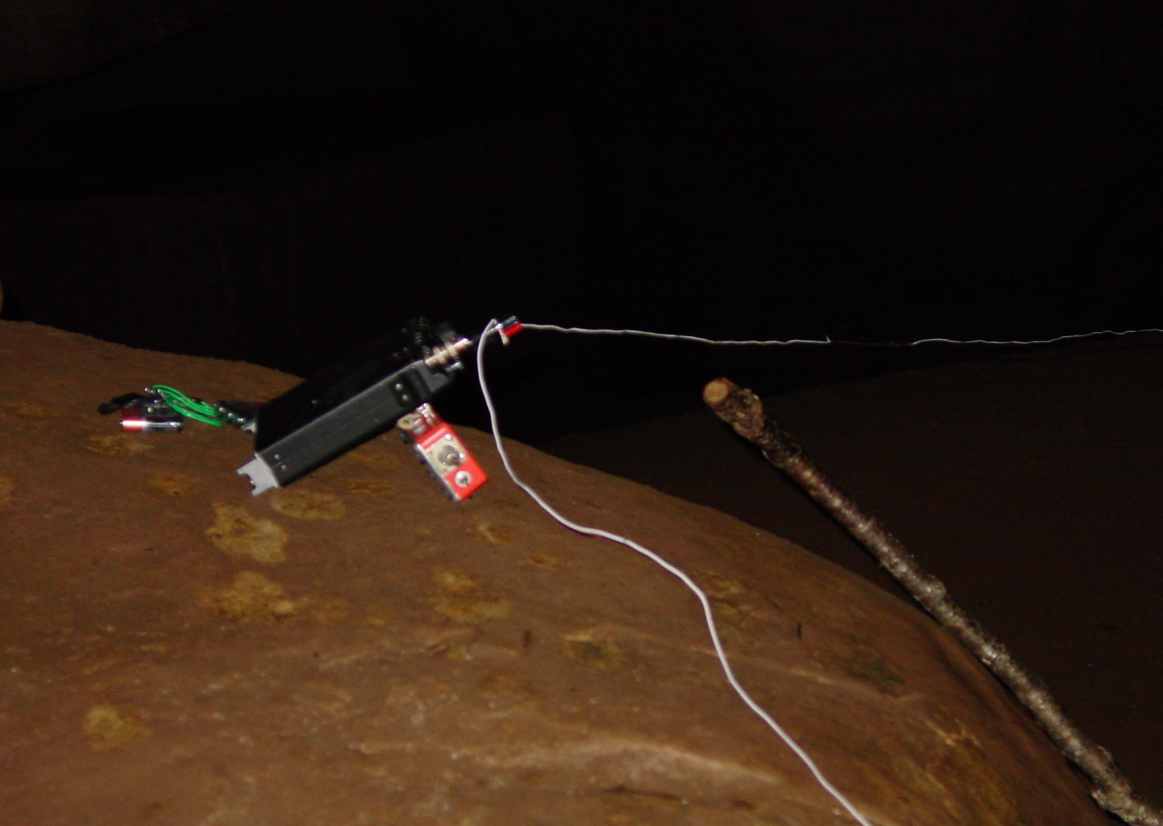
**Moo cows guarding one of the holes**

Inside out:



**That last smidgeon of dayight**

Yes it got completely dark after the first curve. Signals from a two meter beacon placed in the mouth of the cave faded right after after the second curve. I was going to have to follow the water to navigate as my trusty 2 meter handheld wasn’t so trusty for once. After about 200 yards of walking and a little crawling it was approaching 2100Z: W1AW bulletin time. A hasty horizontal 66 foot wire dipole was constructed. My XYL functioned as an end insulator. Here is the Yaesu FT-817 in action picture:



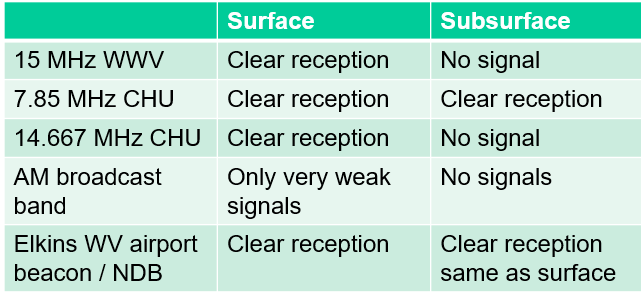
**Yeasu FT-817 in W1AW bulletin cave service**

What a relief! The W1AW CW bulletin was solid copy at S7 on 7047.5 kc! ARRL Headquarters was right on schedule at 2100Z. Thanks to my XYL and those 2 KW Harris transmitters at league HQ. That bats seemed to enjoy it too.



**Copying those W1AW bulletins**

After the bulletins tuning discovered other HF and lower frequency signals too. NVIS skywave and ground wave signals did best into the cave. There was no AM broadcast down there, although it could get down there the area is so remote there are no stations for 100 miles maybe. Snells window meant that low takeoff skywave reception was impossible due to the sharp refraction at the earths surface. You can’t DX at low takeoff angles from underground. Induction loss in the slightly moist and conductive overburden meant a dissipative loss that the rose with frequency. Here is a samping of the signals received:



**Some received signals**

Real cave radio systems may operate at 40 kHz for voice and 3 kHz for data using “transformer mode” by coupling between multiple turn loops. The ARRL doesn’t transmit there though, maybe they should.

Butch WA4AQV

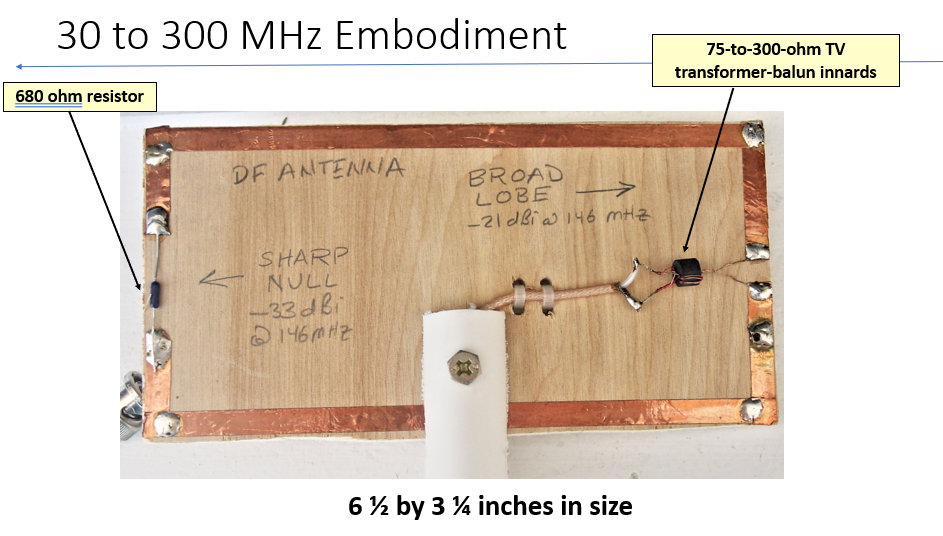
**Satellite Launch**

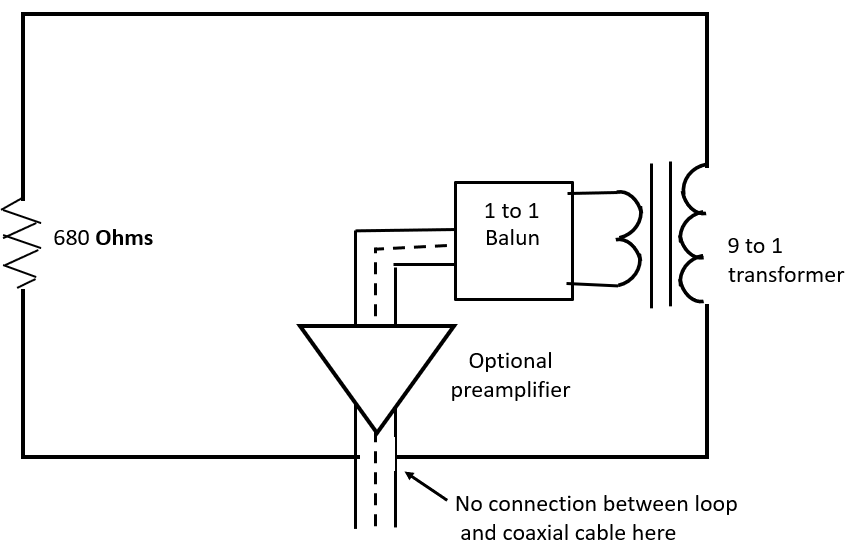
GENESIS Ham Satellites among Payloads Lost in Launch Failure

<http://www.ARRL.org/news/view/genesis-ham-satellites-among-payloads-lost-in-launch-failure>

**Flag DF Antenna**

The September 2021 HIARC meeting was an analysis and demonstration of the Flag Direction Finding Antenna from March 2021 QST. Here is a small hand held version for 50 to 300 Mhz.





**Flag Direction Finding Antenna Schematic**

**HF Flag Direction Antenna Unit**

* No tuning
* 20 to 1 bandwidth
* Improvise when needed
* Low gain
* Effective to find interference

**Trapping A 10 meter Whip To Cover 6 Meters As Well**

You go to the end of the 10 meter whip and fold down ¼ wave of wire 6 meters to get a folded distributed trap two band antenna. This worked for KX4TH. Picture:



**Emergency Nets**

If you have an emergency you need not wait more than a few days to report it. There are four emergency nets in Brevard County to serve you. Here they are:

**A correction for the Emergency nets.**

MREN (Melbourne Regional Emergency Net (PCARS) is at 7PM on Thursdays …usually on the .661 repeater if it is working and on the .685 if not.  The SKYWARN net meets on the same repeater as the MREN as soon as MREN is done (usually around 7:15 PM) and is usually done by 7:35 PM.  MREN may pass traffic on things like tailgate parties or hamfests, DX sessions at the club station or info on repeater status, like the recent water in the feed on the .661 repeater, etc.

The South Brevard Emergency Net is really more of an open forum net and meets at 8PM on their 147.355 repeater. The repeater belongs to the Palm Bay Amateur Radio Club (PBSARC).   It is run differently than an emergency net.  They do a roll call and allow stations that check in to discuss a few things.  And after roll call, they call for any other stations.  They then switch to their UHF repeater at 444.325 for a fast check in only to verify that equipment is operational.  The UHF repeater is used for their net if the VHF one is not working.  They sometimes go to a simplex frequency also for a quick check in to see who can hear whom on that freq without the repeater.  And lastly, they operate a Fusion radio net if you have one of those radios.  Although not run as an emergency net, the SBN would be pressed into service during an emergency like the other nets.

The EOC operates an ARES emergency net on the 147.135 EOC repeater at the EOC in Rockledge at 8 PM on Fridays, calling the net by ARES districts, usually starting with the south Brevard area that runs from the southern extreme of Brevard County to Sarno Road (by suffix of call sign), then they do central Brevard followed by North Brevard.  They can be hard to get into if you are in the S Brevard area unless  you have a decent antenna and more than 5W.  I can key it up but they have trouble copying my 5W handheld that feeds a vertical in the “attic” above my  3rd floor apartment.  Other stations relayed last time for me.  I  have a 50W amplifier that I plan to put to use on 2m and I am sure that will make a world of difference.

So, with HIARC, that would make 4 emergency nets plus SKYWARN.

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Terry W4EE



**Animal Antennas**

