Field Day 2016

June 25 - 26 , 2016

Prologue:

The last full weekend of June is the time most amateur radio operators look forward to, as this is the weekend of the annual ARRL Field Day. Members of the Reelfoot Amateur Radio Club once again gathered to put multiple stations on the air to demonstrate portable capability and emergency preparedness. This year as the last couple years, the Field Day weekend falls on that just prior to the 4th of July weekend. Participants from Region 2 of IARU, which includes North and South America and the Caribbean, all take to the field to have fun this special weekend. The event lasts 24 hours and begins at 1 PM CDT on Saturday.

CW Antenna with Old Glory

Usually this weekend can be counted on to be, if not THE hottest day of the year, pretty darn close to it. It was ... in spades ! In addition to the great heat, the high humidity took its toll on everyone and slowed preparation down greatly. With heat indicies above the century mark, we were counting our blessings that we had air conditioning ! We all had to be careful and remember to stay hydrated. We all drank cases of Gatorade and Powerade !

This year, we knew up front that member participation was going to be down. Todd W4TZX who anchored the phone station last year, could not attend this year's event. The good news is that those that were able to attend, stepped forward and quickly filled the void. We were able to remain in the very competitive class 3A - three HF stations, with a free VHF station, and the "Get On The Air" station with Glenn's call sign N4MJ. Steve KK4NNH was again captain of the GOTA station, a station that did a fantastic job last year. Bob K9IL again held down the CW station with Rose W9DHD's radio. New phone station captain Michael AK4VU brought his very nice Kenwood TS-480HX and Jamie WB4YDL brought his new Elecraft K3S for the digital station. In addition, Jamie also supplied the Yaesu FT-847 for VHF duties.

This year there were new bonus point opportunities added for the Field Day event. This included the Social Media bonus that promotes Field Day activity via social media outlets such as Facebook, Twitter, Instagram, etc. Given how pervasive this media is, this was an easy 100 points ! Reelfoot Amateur Radio Club has had a Facebook page for several years. The other bonus point opportunity is the Safety Officer Bonus. This year we formalized what we normally do and made Noel KJ4UNX the official SO for the event. He had to make sure to verify that the event area was in safe condition and that First Aid was available. Noel is also newly certified in Basic Life Support from the American Heart Association. This bonus also counts for 100 points. Noel also sent out the press release advertising Field Day operations. All other bonus point opportunities were the same as in previous years.

Steve KK4NNH at GOTA station

Setup:

As it has been the last several years, setup of the Field Day site can commence at 00Z on Friday, which works out to be 7 PM on Thursday evening. Because of the immense heat and humidity, we came to the site in anticipation of trying to do as many things as possible outside in relatively cooler conditions. After all the heat index was only 107 degrees ! Yikes ! Useful daylight lasts until about 8:30 PM. Mounts for the CW and digital station antennas were set up and the ground anchors, always the hardest part of this operation, were set. You know something is up when you hammer a bayonet ground anchor and instead of the expected "thud, thud, thud", you hear "tink, tink, tink" !! The grounds are full of rock and metal of some

Raising the Spiderbeam

kind making it arduous to get anchors in the ground, especially the screw-in variety ! Nevertheless, it got done so we didn't have to deal with this and the very hot sun the next day.

We all retreated to the air conditioned comfort of "The Shop" and began setting up the actual radio stations and testing them attached to dummy loads. The layout inside the shop was as it was last year with the CW and digital stations sharing one corner, and the phone and GOTA stations sharing the other corner. The covered billiards table was again in the middle with another table and chairs nearby. This has proven to work quite well with space to lay out food and flyers as well as give the station operators plenty of space.

The CW station once again consisted of Rose W9DHD's very nice Kenwood TS-590S transceiver and Jamie WB4YDL provided a Winkeyer for flawless CW generation. The computer uses the N3FJP Field Day software that is easy to configure and use. The CW station is also used to acquire the alternative energy bonus when we use a solar panel and QRP for the first 5 QSO's. Bob likes a particular laptop to be used for logging as it has more desktop real estate. He provided the laptop !

Michael AK4VU provided the phone station with his very nice Kenwood TS-480HX transceiver. This is a unique transceiver in that it requires two power plug attachments to allow for up to 200 watts output. In order to be legal in the low power category, we turned it down to 150 watts. The intercom box was again used for cross-talk between operator and a logger and it worked extremely well. We decided to use ICE 419 bandpass filters at this position and initially, there was trouble with the power supply accepting this in line. This was traced to a bad solder joint in the power plug to the ICE 419 BPF's. Once this was taken care of, there were no further troubles. The phone station also made use of the N3FJP logging software.

Over the past year, Jamie WB4YDL upgraded his home station by selling his venerable Yaesu FT-1000MP Mark V and acquiring another Elecraft K3 - this time the new K3S. This has the advantage of USB connectivity that not only provided radio control, but also provided line level audio to and from the radio via its own CODEC. This allowed Jamie to consider a less complex station than before in this position by using audio digital methods instead of direct keying using an external interface, such as the Microham Microkeyer used in previous years. Jamie set this all up at his home and it worked extremely well. The N1MM+ Logger was used with the flDigi interface to run both RTTY and PSK31 flawlessly. Upon setting this up at the Field Day site, Jamie did not feel the need to re-test all this on site - despite having his laptop backpack slip off his shoulder and landing on the deck with a disheartening thud. This would allow a big door for ol' Murphy to walk through.

Jamie working with photo drone

Steve KK4NNH brought his Kenwood TS-590S transceiver and set up his GOTA station as last year. He used a Mac computer running Windows 7 via "Bootcamp" to interface with his radio and this worked very well. This year, he decided to use the N1MM Logger software with the flDigi engine for his operations. He found this to be quite efficient and easy to learn. The GOTA station is also designated the experimental antenna station. This year, Steve and his son Samuel KK4SJE used a variation of the shortened "barber pole" antenna. This was a much larger antenna configured as a vertical dipole. A standard dipole was also available for use at this position.

The following morning, we met early in order, we thought, to beat the heat. Well, it was already hot and getting hotter ! The CW station uses the nice two element Mosely MINI-32 tri band beam mounted on a 30 foot push-up mast and turned by a simple TV rotator mounted

Michael & Jamie at digital station

on a PVC mast. As we already had the mount set up and the antenna was stored in the shop already constructed, it was trivial to mount it and raise it. Along with this antenna, a 135 foot dipole doublet was mounted with the mast as its center support. Ladder-line fed, its LDG tuner is mounted in an ammo box and sits on a nearby ladder. It is controlled in the shack using a bias-T to power it.

The Spiderbeam has been the more complex antenna to construct and raise in the past. This antenna is used by the digital station. This year, Jamie WB4YDL decided to procure the very nice NN4ZZ Hex-Lock which allows the Spiderbeam to be constructed on the actual main mast. When building the antenna, the mast is bent 90 degrees to allow easy access and construction. When the antenna is eventually raised, the Hex-Lock will straighten with the antenna weight and lock in place fully vertical. Very neat ! The aluminum mast is mounted in a Penninger mount where a Yaesu G-450 rotator is mounted. Once built, Glenn's tractor and front loader would pull the antenna and mast vertical with guy ropes over a 10 foot ladder. It all worked very smoothly.

Barber pole Antenna for GOTA Station

As with last year, the phone station also sported a two element Mosely MINI-32 triband beam mounted near the shop. The low band duties would be supported by an Extended Double Zepp antenna. The small tower normally used for the VHF antennas was again anchored in position. Todd W4TZX was kind to lend his antenna rotator used last year to again be used this year. The old "junkyard dog" 6M beam was located among honeysuckle vines and freed up for use. It was mounted as was the Cushcraft AR-270 vertical. With an assist with Glenn's tractor and front loader, the VHF tower and antennas were raised into position and chained to remain steady. Also on this tower was a pulley and rope to raise a dipole for the digital station. Finally, Michael AK4VU provided a very nice push up mast which was set up in the North field and raised to 40 feet to support a 135 foot dipole doublet. Interestingly, the tension on this antenna caused the VHF tower to lean somewhat during the event. It was not felt to be important to correct this for the 24 hour event.

With all the cables run into the shack, the radios were all tested on actual antennas. All appeared to work extremely well and antennas loaded as expected. We appeared to be ready for operations. Ray N4SLY and XYL Dolly KN4SLY were not available for the Field Day event, however, they did supply a 5KW generator for Noel KJ4UNX's pop-up camper. The camper was setup and provided shelter and air conditioning for the VHF station and also sleeping quarters for the Field Day chairman ! The generator was noted to be quite loud and higher pitched than the other generator.

The Operation:

DJ at GOTA station

Saturday morning came and was wet and sultry. Expected heat indices for the weekend would easily exceed 100 degrees. Old Murphy started to show up early. Jamie WB4YDL discovered that his laptop computer was not well. It would suddenly shut down completely as if it were very hot. This was not good ! Glenn N4MJ had a spare Sony laptop at his QTH and he and Jamie drove over and proceeded to load it up with the digital software - N1MM+, and flDigi. Jamie also installed the macros so important to digital communication from memory. Once taken to the Field Day site, it was discovered that a USB driver needed updating. Phil N4PWG set up his smart phone as an internet hot spot, and the driver was able to be downloaded and installed. Suddenly things started to perform as it should at the digital station and it was back in business.

Samuel KK4SJE set up a nice public information booth with new display and a table full of flyers - good for 100 bonus points. Steven KK4NNH and Samuel KK4SJE showed off their new iteration of the Barber Pole antenna. This year it is a larger antenna that is configured as a vertical dipole for 20M. As such, it did not require a ground counterpoise. It was discovered by testing that it needed a fair bit of separation from the other antennas and other structures to perform well and reduce inter-station interference. Overall, interference levels were much reduced form previous years. Bandpass filters were used on all stations except the GOTA station. The W1AW Bulletin was successfully copied by Michael KJ4KHX and good for another 100 points.

The VE test session began at 9 AM and we had one successful tester - Dwayne Rauch came and passed his Technician Class license exam. Congratulations !!

The generator was started about an hour before formal operations began at 18Z (1 PM local) and radios and computers were checked. For whatever reason, Bob's laptop would not talk to Rose's radio. Steve KK4NNH came to the rescue with the correct driver and this issue was quickly fixed.

At the appointed time, formal Field Day operations began. Out of the gate, Bob K9IL quickly racked up the QRP solar powered QSO's with the help of Jamie WB4YDL's solar panel and hemostat connected gel cell battery. The Buddipole solar charge controller that was acquired last year was AWOL - so another visit by ol' Murphy. After that, the battery was taken off line and the transceiver connected to the power supply. Bob then took off on 20M CW with no issues. The MINI-32 beam, which was accidentally never used last year, was doing a good job with poor band conditions.

Jamie's quad-copter drone

After the replacement laptop computer was placed into action at the digital station, there were no further visits from ol' Murphy. Jamie WB4YDL got a somewhat late start, but was able to run RTTY on 20M without interfering with the other stations on the same band. Steven KK4NNH was using N1MM Logger for the first time with the flDigi engine and he was having

Jamie & Phil at digital station

a ball. The common denominator was the very poor band conditions - one minute a contact could be made and then it would just fade away. Also there was lots of one-way signals - meaning that you could hear them clearly, but they can not hear you at all. Very frustrating !

The phone station was manned by Michael AK4VU and it was a slow go for making contacts. Did I mention the poor band conditions ?! There was a power connector on the bandpass filters that was causing some early issues, but this was easily fixed. His Kenwood TS-480HX performed flawlessly at 150 watts output. The new tighter SSB filter and stabilizing TXCO crystal made it essentially a new radio. Contacts were being made - it was just tough going. The intercom box was a nice addition for a logger or just a visitor to listen and to talk to the operator and lend an ear. A foot switch was added this year that also was nice to free the hands.

The GOTA station is designed to be a PSK31 station which most of the younger operators appreciate. Using the new Barber Pole antenna and about 40 watts, many contacts were put into the log. Harold KJ4FTM and his young son D.J. came to visit. D.J. is only 10 years old and he was fascinated with PSK31 communications. He settled down and made over 20 QSO's, qualifying for double-double bonus points. He was also one of three youths to qualify for the youth bonus points. Our newest member, Wilbur McWherter came out to help and learn about ham radio and he, too, qualified for double-double bonus points at the GOTA station. Hopefully, both D.J. and Wilbur will have their own call sign soon.

Aerial view of CW antenna

Meanwhile, at Noel KJ4UNX's camper, a change in venue for the VHF station, the generator lent to us by Ray N4SLY was acting strangely. It was over-revving and eating gasoline. Jamie had his Yaesu FT-847 set up with a small MFJ switching power supply and upon powering up this supply, it blew and ceased to function. The lights and other functions inside the camper were functioning fine as well as the air conditioner, so it was felt that the old power supply was at fault. Glenn N4MJ had a larger linear power supply and this seemed to function just fine. It was time to attempt a satellite QSO by using packet transmission with the digipeater on the International Space Station. Just about the time the ISS came in range, the generator ran out of gas and shut down ! What ?! Run out of gas ? So soon ? Yep. And when it was gassed back up and restarted, the ISS was long gone over the horizon. About this time, the power supply was switched on and it too let the smoke out ! What in the world was going on ?! It turns out that checking the line voltage from the generator produce over 160 volts AC !! We had already blown two power supplies so it was decided to take the generator off line and plug the camper into the mains at the shop. This cured the line voltage problem. We then finally found another power supply to hook the FT-847 up and we were back in business.

Six meter operations were nearly non-existent. The sun had no spots and there simply was no propagation on the higher bands at all. A digipeat ISS contact was finally made Sunday morning and this was good for 100 points.

Two meter operations were routinely made by Jamie WB4YDL with many more than the needed number of messages for the formal NTS message bonus. This was performed via Winlink with many Field Day stations across the country. Also a formal Winlink message was

Spiderbeam antenna

sent to Keith Miller N9DGK, the Tennessee Section Manager. So 300 total bonus points were acquired using 2 meter frequencies. Awesome !

Once again, Mr Ralph Puckett, Obion County Commissioner, and his wife Shirley visited the event - good for 100 bonus points. Our own Phil N4PWG is Troy, TN EMA/NIMS director and together, their visits gave us 200 bonus points.

The Results:

This year we had 13 licensed operators and 2 unlicensed operators participating in Field Day operations. Participation was down this year and we had less youth wanting to get in the game. Both unlicensed operators made PSK31 QSO's at the GOTA station. The following are the bottom line results :

Score Summary:

	CW	Digital	Phone	Total
Total QSO's	494	317	133	944

Band / Mode QSO Breakdown:

	CW	Digital	Phone	Total
80M	2	0	23	25
40M	202	58	36	296
20M	260	74	57	391
15M	30	0	13	43
10M	0	0	1	1
6M	0	0	3	3
SAT	0	1	0	1
2M	0	0	0	0
GOTA	0	184	0	184
TOTAL	494	317	133	944

Thanks to the new bonus point opportunities, the bonus point total this year was increased from last year's great mark to **1930 points**. This occurred despite decreased GOTA station participation and reduced youth participation. Excellent results with bonus points were earned by Samantha KK4NNM, Steve KK4NNH, and Samuel KK4SJE, and unlicensed operators,

D.J. Covington and Wilbur McWherter. A total of five operators earned double bonus status with Steve earning a *quadruple* double bonus. The total number of bonus points generated by the GOTA station this year was a very respectable 320 points.

The total QSO score after the power multiplier (x2) came out to **3510 points** - a big reduction from last year's record. This was due primarily to severely poor band conditions as well as decreased participation. This made the total submitted score **5440 points** for Reelfoot Amateur Radio Club in the class 3A category. Despite overall decreased participation and the extremely poor band conditions, making it essentially a two band event (20M and 40M), the score turned in was still the 3rd highest in club history. This would be true even if the new bonus points were subtracted. Considering all the adversity, this was a very good score.

Glenn & Benny's granddaughter

Epilogue:

Being able to operate in adverse conditions is what Field Day is all about. Given that overall band propagation rarely supported communication above 20 meters, the contest moved to lower frequencies that could support communication albeit marginally. Below 40M was just too noisy to make much of an effort. However, the phone station made the best of the 80/75 meter band and managed to log 23 QSO's. There was no digital activity outside the 20M and 40M bands but RTTY activity was up this year.

Many lessons were learned this year and ol' Murphy saw to it that we learned a few the hard way ! The addition of a Safety Officer is a good one and this will be expanded on next year. In addition, generator output will be measured prior to tempting fate !

Photography for this event was provided by Michael AK4VU, Glenn N4MJ, and Jamie WB4YDL with a little assist from his quad-copter drone.

The Shop at the QTH of Glenn N4MJ was once again the perfect Field Day location and the club members owe many thanks to Glenn and XYL Linda for a wonderful experience. Thanks also go to our XYL's who kept us hydrated during this dreadful hot spell. Also thankfully, there were no injuries or heat casualties. We'll see how we stacked up against everyone else when the full Field Day results are published in the December issue of QST.

Soapbox Comments :

Glenn N4MJ :

Field Day 2016 Recap:

All things considered - defective generator, two power supplies blown (because of defective generator), failed laptop, terrible propagation (Sun Spots = 0)...we probably did comparatively well. We'll know when the official results are published later this year.

The one thing that could make for a better score is - CW Ops. It isn't difficult, especially in a contest environment. Information exchanged is structured - call, class, section, ie N4MJ, 3A, TN. The speed, or lack thereof, can be handled. Most Ops will slow down (QRS) when a slower speed is sent or if asked (QRS). Between now and the next FD, one could learn code and have enough expertise to work some great CW.

These days, there are apps for Smart Phones that allow one to practice CW anytime, anywhere it is convenient. Yesterday, I renewed a connection with a fellow who is learning via his phone app. He has no background in CW or radio but is interested and has begun learning CW via the app. His comment was, "I can send it faster (using a 'tap') on the phone than I can receive it". That's the way it usually goes. Once the sending is ingrained, the receiving follows; the brain plays catch-up.

Give it some thought and if you need help or have questions, ask...Bob, Jamie, and I will be happy to assist any way we can.

The digital station(s) did well thanks to Steve and Jamie. Here we could do better, too. There was a void of Ops during the late night, early morning session on the digital station. Steve

Samuel KK4SJE taking a rest

kept the GOTA station going all night and did an excellent job. With five minutes on-the-job training the digital operation can be learned but again we need all night Ops.

The phone station was likewise lacking Ops for the late shifts. Mike, AK4VU, worked though the night by himself.

The phone station seems to be a frustrating position, yet many only want to work phone...until they experience the frustration of too many stations, too close in frequency, running high power. The QRM is fierce, the frustration of all that plus running 100 or 150 watts gets to be too much in a hurry. Then Ops walk away.

In summary - improvement in our operation can be made by having more CW Ops, more Digital Ops - especially during the late evening and early morning hours. The only solution I know for the phone station is for the club to go HIGH POWER but that creates more problems - interference from operating with more power is apparent. If one station goes high power then all stations would have to go high power or at least be classified as being high power; that would probably hurt our score as we would be compared against many truly high powered operations.

So, we're back to one of my favorite axioms: make the best of what you have. To do that means we stay low power but make more CW and Digital contacts, which, obviously means more CW & Digital Ops throughout the night.

There are 11 3/4 months til the next FD. Get out the key and/or software and start learning CW & Digital.

73 de n4mj//grs

Steven KK4NNH :

The GOTA station was fun. We had 2 people introduced to digital who were new to amateur radio and I believe they enjoyed it.
We had two antennas: The dipole and the barber pole. We rarely used the dipole. Almost all contacts were made with the barber pole.

The vertical barber pole was a modification from last year's shortened helical vertical with ground radials.
This year it was a full vertical dipole helically wound like a barber pole.
The biggest issue with the barber pole was that it was noisy. When using it near the other antennas, it splattered
all over the band causing lots of interference. However when we moved it 120ish feet out into the field away from the other antenna's, this
was mitigated. It is a very low resistance antenna but not short. It has a wire/tape length that is about 1.75 wavelengths.
I believe due to the low take off angle and vertical polarization, that when it was 10 ft behind the steel building it was blasting
the entire steel building with RF.
From a performance standpoint, it did equally as well as the dipole. With the atmospheric problems I was very pleased with it's performance.

Our biggest issue on the GOTA station was that by the time we made a contact they would fade away before we could complete the exchange.
There were times with some stations that we both tried 5 or 6 times over the space of 2 or 3 hours before completing the contact.

Steve
KK4NNH

See you on Field Day 2017 !

When all else fails ... Amateur Radio.