Field Day 2014

June 28 - 29 , 2014

Prologue:

The members of the Reelfoot Amateur Radio Club always look forward to the annual ARRL Field Day operating event. This event is always the last full weekend of the month of June and, this year, lands on the weekend before Independence Day. The event is defined as an emergency preparedness event and allows amateur radio operators to test their equipment and themselves for times when their services might be needed, such as during man-made or natural disasters or other emergencies. It is also a time to have fun and try to make a lot of points in this non-contest contest. During this exercise, certain adversities often arise and we just chalk it up to Ol' Murphy and find ways to improvise and overcome them. This year, it seemed there was a lot to overcome.

There were no changes in the ARRL Field Day rules for this year and so, like last year, we were able to begin setup on Thursday evening. As with the last several years, the location for our Field Day event was again at "The Shop" at the QTH of Glenn N4MJ. Glenn had the lawns looking good and it was a pleasure to once again set up there. Our entry class was once again 3A as we maintained a dedicated digital station for RTTY and PSK31 operation. Speaking of digital operations, this year it was decided to add digital capability to the Get on the Air (GOTA) station as there was increasing interest in this by our young operators last year. This turned out to be a great idea but several hurdles had to be cleared before it would work out. Earlier in the year, the Reelfoot Amateur Radio Club entered in the ARRL RTTY Roundup as a multi-one entry using this same station. In that category, K4RFT, the RARC call sign, placed first in the Southeastern Division and 7th overall nationwide. Not bad for a first try in this contest ! So expectations were high that the GOTA station would produce some good scores.

Old Glory flys at CW antenna mast

It was further decided that the GOTA station would serve as the experimental station for antenna projects. After some discussion at meetings and on the reflector, Todd W4TZX came up with a design for a dual-band, 15 and 20M, vertical dipole array modeled after the antenna by Vincent F4BKV . Using this antenna and the 40/80M fan dipole used during the RTTY Roundup, the GOTA station would be set. Also this year, each HF station would have a dipole to work the lower bands of 40M and 80M - no shared antennas. We also welcomed back Bob K9IL as a dedicated CW operator, although he could not play full-time.

Traditionally a VE test session would be planned and held, however, there were no candidates expressing interest to test. So for the first time, the VE test session was scrubbed.

Setup:

At the appointed time on Thursday evening, that is 7PM or 00Z Friday, members of the Reelfoot Amateur Radio Club met at "The Shop" for a working meeting. Normally the regularly scheduled monthly meeting is the 4th Thursday and this happened to fall on Field Day setup day. Hannah KK4SJF provided awesome refreshments for this 'meeting' including homemade bread ! Radio stations were set up in a fairly routine fashion except for the GOTA station which was already set up since the RTTY Roundup - or so we thought.

The CW station switched positions from its traditional window spot where the GOTA station would be positioned. Bob K9IL set up Rose W9DHD's Kenwood TS-590S, a really nice radio with an excellent receiver. To this was added Jamie WB4YDL's Winkeyer which allowed smooth CW operation on a separate com port. The alternative energy bonus is performed on this station by utilizing a solar panel connected to a gel cell (using Jamie's hemostats !). However, since the station was away from the window, accommodations had to be made to allow things to reach. Jamie made up a power pole

Spiderbeam and phone station antennas

extender cable and all was good. Bob wanted to use his laptop computer and this was no problem - the N3FJP software was loaded as well as the USB driver for the TS-590S transceiver. CW macros were added and the station was good to go. The nice thing about this setup is that CW can be sent either by the Winkeyer buttons, the traditional function keys of the computer keyboard, or the key itself. The bad thing is that the N3FJP software seemed to only allow one or the other method and needed a reset to select which one.

This year the phone station was under the command and control of Todd W4TZX who brought his excellent Icom IC-746 transceiver. This radio has an excellent front end and very nice DSP filters to make phone operations a pleasure. Bandpass filters were not utilized at this position as an external tuner was not available. The one thing that was sought and written about in last year's after action report, was the addition of an intercom system so a fellow ham sitting next to the phone operator could log for that station and talk between the two of them using quiet headsets. Well, last year, Jamie WB4YDL was busy giving lectures on contesting and happened to land in Paducah. The Paducah Amateur Radio Association presented to Jamie a very nicely built intercom box along with a PC board to build another - thanks Ed AB4IQ !! Todd's laptop also ran the excellent N3FJP logging software.

Glenn N4MJ at CW station

The digital station again consisted of Jamie WB4YDL's Elecraft K3, TXBPF bandpass filters, the Elecraft P3 panadapter, and a 200 watt LDG autotuner. All connections were made and tested on Jamie's laptop running N1MM Logger software and all functioned extremely well into a dummy load. Digital modes during Field Day mostly consists of PSK31 and some RTTY. PSK31 is an audio mode which makes use of the digital processing power of a common computer sound card. RTTY can also be run this way by generating the mark-space "diddles" on the computer and passing them to the radio to be transmitted as audio - similar to phone. More classically however, RTTY is done by frequency shift keying at the radio and is more akin to CW - basic on-off signaling. To handle all this, we made use of a Microham Microkeyer (version 1), which Jamie utilizes at his home station.

The GOTA station turned out to have issues - not so much with the station set up itself, but with the computer interface. The GOTA station consisted of the Yaesu FT-920 transceiver which has a few idiosyncrasies. There is a slide switch on the back of the radio to select either AFSK or FSK. Because audio (sound card) modes were anticipated to be used (PSK31), the switch had to be set to AFSK, and RTTY would have to become an audio mode. As with the digital station, a Microham Microkeyer was pressed into action to handle digital interfacing. The initial computer was Glenn's old Windows XP desktop which was used so successfully during the RTTY Roundup. However, we were now adding sound card interfacing to add PSK31 capability, and this turned out to be quite a challenge. In fact, we had to abandon the Windows XP computer as we simply could not get sound to register in the software used to decode these signals. In hindsight (always 20/20 !), it turns out that the error may have been in setting up the sampling rate of the sound card. Rose W9DHD's laptop computer was pressed into service and the software was installed. This consisted of N1MM Logger with MMTTY and flDigi engines. The software worked flawlessly on the Windows 7 OS and had no sound card sampling issues. Good thing too, as the hour was approaching midnight and everybody needed to rest for antenna raising the following morning.

There came a flood ... ! Actually, it seemed like one typhoon after another !

Friday morning came pretty quick and Todd had the vertical dipole array for the GOTA station all set up in very little time. This is a two element array with driven elements and reflectors making a vertical beam. The SWR readings were exceptionally flat for both 15M and 20M. The only limitation was that the array could not be turned or directed into favored directions. This turned out not to be a big deal. The dipole covering 40M and 80M was already deployed and tested good as well.

Vertical dipole array for GOTA station on 15/20M

The CW antenna array again consisted of the Mosley MINI-32 yagi triband antenna mounted on a 30 foot push-up mast and rotated by a simple NTE TV-type rotator. Last year the rotator control cable came up about 8 feet short and had to be lengthened on the fly. This year the cable was 20 feet longer ! This actually worked well as again the CW station was positioned a bit further this year. A ladder-line fed dipole was used for the low bands with an LDG Z-100 tuner mounted at the base of the mast. This was again powered from the station using an MFJ Bias-T through a 1:1 balun. From past experience with this setup, the 1:1 balun worked better than the normally used 4:1 balun. Power to the tuner was shut off once a match was found, to lock in the match.

The phone station antennas also used a Mosley MINI-32 yagi beam antenna as well as a center-fed dipole doublet like the CW station. A 4:1 balun was used at this location, as the tuner used was that of the Icom IC-746. It worked very well.

Always a challenge to deploy, and always worth it, the Spiderbeam is a wire tri-band yagi antenna consisting of 3 elements for 15M and 20M, and 4 elements for 10M. Jamie WB4YDL spent much of the previous Spring streamlining the construction process to make it as painless as possible to build and mount. As with last year's deployment, the Spiderbeam was mounted on a 35 foot mast on top of a Penninger base mount. It is rotated with a Yaesu G-450 mounted at the base of the mast. It takes some manipulation at height on a 10 foot step ladder to mount the Spiderbeam to the mast, a process that improves each year. The raising of the mast is actually more hair raising than antenna raising !! However once vertical, the Spiderbeam is quite a sight to behold and it works oh so well ! No dipoles were mounted on this rotating mast but may be considered in the future. The dipole doublet for the digital station was actually added to the VHF tower this year.

Did I mention we had rain ? Lots of it ! The VHF antenna deployment had to wait until Saturday morning due to this inclement weather. The tower used was Bob K9IL's lightweight 25 foot Rohn tower. But where was the home-brew 6M antenna that we normally used ?? Well, Glenn N4MJ had been cleaning out the shop this past Spring and stacked up lots of old TV antenna tubes in a pile that was now overgrown with weeds and honeysuckle. Yep, there it was in that stack ! Carefully, Jamie crawled into that mess and gently extracted it. It needed a little cosmetic work and re-measurement, but once mounted, worked very well. Jamie added the 2M/440 vertical used for many extra bonus points and Todd added a 'yardarm' at the top to mount the center of the digital station dipole. It all went up very well and held that way by chaining it to the front loader of Glenn's tractor. The VHF station again consisted of Jamie's Yaesu FT-847 with a Kantronics KPC-3+ packet TNC and housed in Ray N4SLY and Dolly KN4SLY's cool camper. Jamie provided the laptop with N3FJP Logging software as well as Winlink and UISS software for message handling and a satellite QSO.

Contesting Information and Tower Safety Education with 'Buck'

The Operation:

Operations for the Field Day event actually starts with obtaining certain bonus points. Noel KJ4UNX was in charge of securing the public announcement bonus and a very nice front page write-up appeared in the Union City Messenger the Wednesday before the event. Excellent !! 100 points in the book. Todd W4TZX went home after helping to raise the antennas and secured the 100 point bonus for copying the W1AW Field Day bulletin. Samantha KK4NNM made another fantastic public information booth poster with a contesting theme - good for another 100 points ! Marv AB4MC presented his tower safety information for the educational bonus - also good for another 100 points. The only bonus points that Reelfoot Amateur Radio Club did not obtain or attempt to obtain was the public location bonus. We eschew this one in favor of the fine amenities of "The Shop" - most particularly the air

conditioning !!

Formal radio operations commenced at 1PM (18Z) Saturday afternoon after a fine lunch. Bob K9IL, with Jamie WB4YDL's assistance, made the obligatory 5 QSO's on solar power at the CW station and then switched over to generator power for the duration. Bob then went on a tear recording over 100 QSO's in about an hour's time.

Ol' Murphy again showed up and reared his ugly head and tagged the digital station hard. Upon powering up the radio equipment, it was discovered that audio was not only absent on the panadapter, but not showing on the computer program as well. Despite all efforts at remedying the situation, Jamie WB4YDL was forced to take the Elecraft K3 and P3 panadapter to his home QTH and force a firmware upload and see if this would result in a cure. It did not. Jamie then returned to the Field Day site with just the K3 to attempt salvage of the situation. He also learned that the audio was not passing through the Microham Microkeyer - this was remedied by cabling the computer sound directly to the radio. This seemed to get things going and digital QSO's began to be made successfully.

Hannah KK4SJF and Samantha KK4NNM at phone station

The digital station was not the only station afflicted by Ol' Murphy. When Jamie returned to the Field Day site, the GOTA station operation was in question. However, this may more likely be chalked up to 'pilot error'. Unfamiliarity with a radio is a common scenario during Field Day and with digital operations, which require an eye on several parameters, it was easy to become confused on certain settings. Manipulation of the digital interface more than likely caused a failure in the auxiliary power of the FT-920 radio. Realizing that power was out at this interface, Todd W4TZX and Jamie rigged a power feed from the CW station power supply ! It worked. And with some instruction on passband and ALC, no further issues were encountered at this station. The GOTA station saw lots of activity and the young operators loved getting on PSK31 on 20 meters. In fact, all but one RTTY contact was made on 20M PSK31 ! Not once did anyone request to move to phone operation.

Yes, I did mention that it rained ...didn't I ?! There were multiple radio shutdowns during this Field Day event, the rainiest anyone can remember. In addition to radio equipment malfunction, certain antennas ceased to operate correctly. The 15M side of the vertical dipole array as well as the fan dipole for the GOTA station showed very high SWR readings quite possibly due to weather-related issues. This hardly mattered to the GOTA operators as they were having too much fun making 20M PSK31 QSO's !

The phone station was the least profitable station of the HF stations as most likely the static noise conditions really slowed things down. The VHF station recorded 6M QSO's when the band opened but nowhere near the number of contacts as in prior years. Jamie WB4YDL and Ray N4SLY were responsible for all the 6M QSO's and there were 19 of them. Jamie also operated the VHF station to secure several hundred bonus points by sending and receiving NTS messages and sending a Field Day greeting to the Section Emergency Coordinator, Dan W4DOD. The time had come to attempt a satellite QSO. As in prior years, the strategy was to use the International Space Station (ISS) packet digipeater to repeat packets sent 'in the blind' in the hope that other stations were doing the same thing, and make contact with one of them. This counts as a satellite QSO for Field Day. This nullifies the need for a full "Earth station" type satellite antenna array for just one QSO. The weekend of Field Day presented only a few opportune passes for which to attempt this. In fact, only two passes could possibly be used. The popular UISS software was used to make connection to the ISS digipeater. During the first pass, the ISS was clearly heard, however, none of the sent packets were being digipeated - what could be wrong ? The last year's identifier for the ISS was RAØISS-4.

Jamie WB4YDL & TN SM Keith N9DGK laugh at weather prediction

But near the end of the pass, it was noticed that there was no -4 at the end of the ISS call sign. Quickly removing the ID from the call sign and just sending RAØISS resulted in good packets being digipeated. But it was too late - loss of signal (LOS) was already upon us and we would have to wait until the next ISS pass - 30 minutes from the end of Field Day itself !! The ISS has a near circular orbit a bit more than 200 miles high and makes roughly 15.5 orbits per day. At the appointed time the ISS packet bursts were clearly heard. Yes, of course it was raining !! I made several attempts and got good packets digipeated. Finally a station in Ohio was captured and a good QSO was made just before LOS. Chalk up another 100 points ! Both this QSO and the SEC message was confirmed by email later that day.

The time had come to finally call an end to operations and we were all tired. Tear down of the radio gear was done in an orderly fashion and antennas were yet to be lowered. Guess what ? Yep, raining again ! Aaargh ! We were all soaked to the bone but everything came down fairly smoothly. The Spiderbeam actually came down easy with an assist from the front loader of Glenn's tractor. We tied the back guy ropes to the front loader and gently lowered the mast onto the 10 foot step ladder. The rest was routine. An exception to this was the new vertical dipole array which did not come down nicely and snapped the main mast when it hit the ladder. An autopsy will be performed and a newer and better version will be constructed for next year !

Todd W4TZX at digital station cranking out RTTY

The Results:

This year we had 15 licensed operators and 2 unlicensed operators participating in Field Day operations. This is increased from last year's participation. 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	390	285	232	907

Band / Mode QSO Breakdown:

	CW	Digital	Phone	Total
80M	5	1	1	7
40M	157	48	115	320
20M	168	87	26	281
15M	59	2	71	132
10M	1	0	0	1
6M	0	0	19	19
SAT	0	1	0	1
2M	0	1	0	1
GOTA	0	145	0	145
TOTAL	390	285	232	907

The bonus point total this year was greatly increased from last year at **1650 points**. This was in large part due to increased GOTA station participation and excellent results with bonus points earned by Samantha K4NNM, Steve K4NNH, and Samuel KK4SJE. A total of 200 GOTA bonus points were obtained.

The total QSO points after the power multiplier (x2) came out to **3164 points** and was an excellent 3A effort considering the weather conditions. This made the total submitted score **4814 points** for Reelfoot Amateur Radio Club. This surpassed last year's effort when skies were blue ! The bright spot was definitely the GOTA station which more than doubled its output and put only 2 point QSO's in the log - 145 QSO's ! The phone station production needs some work and operators with experience to increase that score next year. The CW station could still produce more QSO's as in the past - we need more operators !

Samuel KK4SJE & Steve KK4NNH at GOTA station

Epilogue:

If part of the measure of success of Field Day is how you face adversity, then by any measure, this was a very successful exercise. Ol' Murphy gave us all we wanted and more with the terrible weather compounded by lightning and electrostatic damage to radio hardware. All can be fixed of course, but how we went about securing contacts even though we were hit, is a testament to our resiliency. Radio conditions as a whole were not ideal as 10 meter activity was nil and 6 meters barely showed up. The learning experience gained by all including our youngest operators, will go a long way to future successful operations, or when called upon to serve in a real emergency.

Many, many thanks go to our XYL's and other ancillary personnel that kept us all fed ! Linda and Glenn N4MJ were as usual perfect hosts. Nobody left hungry at this operation ! Look forward to the results of our efforts normally posted in the December issue of QST.

Soapbox Comments :

2014 Field Day Recap-

Field Day 2014 has come and gone....

Antennas went up Friday, on schedule. As usual the Spider Beam was the most problematic but it was raised without incident or accident, just alot of hard work and tugging and pushing by multiple members. The key to raising the SB is to have guy stakes/ropes in place beforehand. That being done the rest is mechanical work.

The Mini-beam for the CW station went up and down easily. Once again, proper planning and training made it happen without incident/accident.

Dipoles went up easily. Todd's experiment with the vertical dipoles for 20/15 came along nicely, however, it seems there wasn't enough gained to continue their use. At the end of FD we de-constructed the support and antennas.

Overall, it seems we have a very good antenna farm - multiple 135 foot center fed dipoles, two Mini-beams, and the SB. For VHF the old beat-up 3 element yagi performed well sitting on Bob's 30 foot tower. Jamie's vertical did the trick for Satellite communications and messaging.

Certainly the solar panel came into play early for bonus points via QRP CW contacts.
Bad weather was the name of the game this year. We had to shut down operations multiple times because of rain and lightning storms. That costs us in terms of points. I did not keep up with the downtime but our logs will certainly show it.

Murphy was present and reared his ugly head in a couple of ways - difficulty in getting software for digital interfacing/logging, a blown chip in the digital station's Spectrum Analyzer, and a blown 13.6 v.d.c. suppy line in the GOTA transceiver. Additionally, there were problems with keyer plug connections and the key at the GOTA station suffered almost total physical destruction.

Thankfully, there were NO major accidents involving personnel.

The XYLs supported the event beautifully, coming through with food prep, serving, cleaning-up. If anyone went away hungry it surely wasn't because of lack of availibilty of food or drink. The Saturday evening meal included brisket, BBQ pork, and fried chicken, fried green beans, salads, potatoes in various forms and plenty of great tasting desserts. Cold liquids kept us cool and working smoothly throughout the weekend. THANK YOU XYLS FOR ALL YOUR HARD WORK TO MAKE OUR HARD WORK A LITTLE LESS FATIGUING. YOU ARE A BIG PART OF RARC AND WE LOVE YA!!!

.Our dignitaries came on schedule to visit and see just what we were doing. Keith Miller, N9DGK, Tennessee Seciton Manager spent a couple of hours with us before moving on to Crockett and Memphis. Keith had a very busy weekend schedule - visiting Jackson group, us, the Crocket County group, and finally the Memphis FD activities. Sunday night he was scheduled to do a radio interview on a station in Memphis.

Yes, it was a very busy weekend for RARC and its members but we got through it and accomplished our goals as a team - equipment set up, antenna construction, ops, social, meals, equipment breakdown, antenna tear down, clean-up.

A personal thanks from me to everyone for your cooperation during each phase of FD.

73 de n4mj//grs
President RARC

See you on Field Day 2015 !

When all else fails ... Amateur Radio.