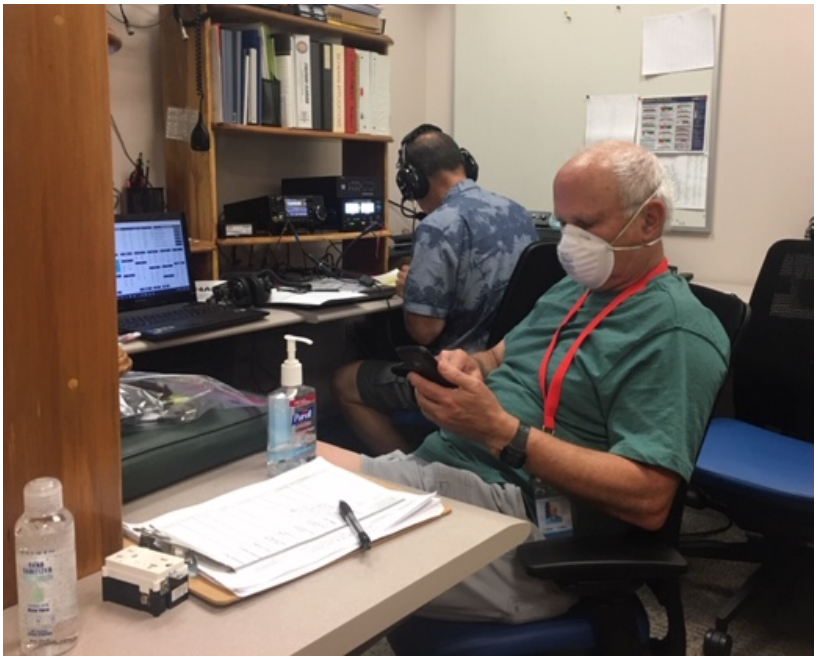
**Alachua County ARES**

**2020 FIELD DAY**

**JUNE 27/28, 2020**

# After Action Report/Improvement Plan

**WRITTEN JULY 11 2020**



**"Station 1"**

**Exhibiting COVID-19 Protection & Plenty of Hand Sanitizer**


Approximate 1000 foot diameter circle enclosing all operations and antennas of the event.

# HANDLING INSTRUCTIONS

1. Points of Contact:

**Alachua County ARES(R):**

| | |
|---|---|
| Name: | Jeff Capehart, Asst. Section Manager. Emergency Coordinator |
| FCC License: | W4UFL |

| | |
|---|---|
| Name: | Gordon Gibby MD, Asst. Emerg. Coord |
| FCC License: | KX4Z |
| SHARES License: | NCS521 |

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# Executive Summary


The Amateur Radio Emergency Service (ARES®) typically organizes at the County Level and upward. In Alachua County, multiple amateur radio clubs support the ARES® mission, including the Gainesville Amateur Radio Society, the North Florida Amateur Radio Club, and the Alachua County EOC Radio Club.

FIELD DAY is a long-standing American Radio Relay League activity, always carried out on the 4th weekend of June, designed to test field preparation of amateur radio for service to the nation as mentioned in FCC Part 97.1

The NFARC club concluded that with careful preparation, in spite of COVID-19 pandemic respiratory virus concerns, a Field Day Event could be carried out at the Alachua County Emergency Operations Center, operating under the EOC amateur radio club call sign NF4AC.

Gordon Gibby recruited volunteers to privately plan a Field Day effort. John Trites, NO5X, volunteer Planning Section Chief put together an extremely detailed ICS-201 with help from other volunteer Section Chiefs, and this plan was approved by the North Florida Amateur Radio Club.

The written plan involved multiple new strategies for the club, which had never carried out a Field Day by themselves before, including two full shortwave transmitting stations, a microwave private network for logging database, a microwave WINLINK system, a community outreach involving the GO BOXES purchased for hurricane shelter usage by the Sheriff's Dept., and our first-ever satellite comms efforts.

A full scale Dress Rehearsal was held on Saturday January 22 with written documentation of problems discovered.

The full Field Day was held commencing at 0800 Local on Saturday June 27, and the facility and grounds were cleared completely by 1358 Local on Sunday June 28th, with a very satisfied group departing.

The group score was computed and submitted by 8PM on Monday June 29th, with an estimated score of 2,312. A large number of photos and other documentation required multiple submittals, and we were learning and doing this for the first time.

## Major Strengths

The major strengths identified during this event are as follows:

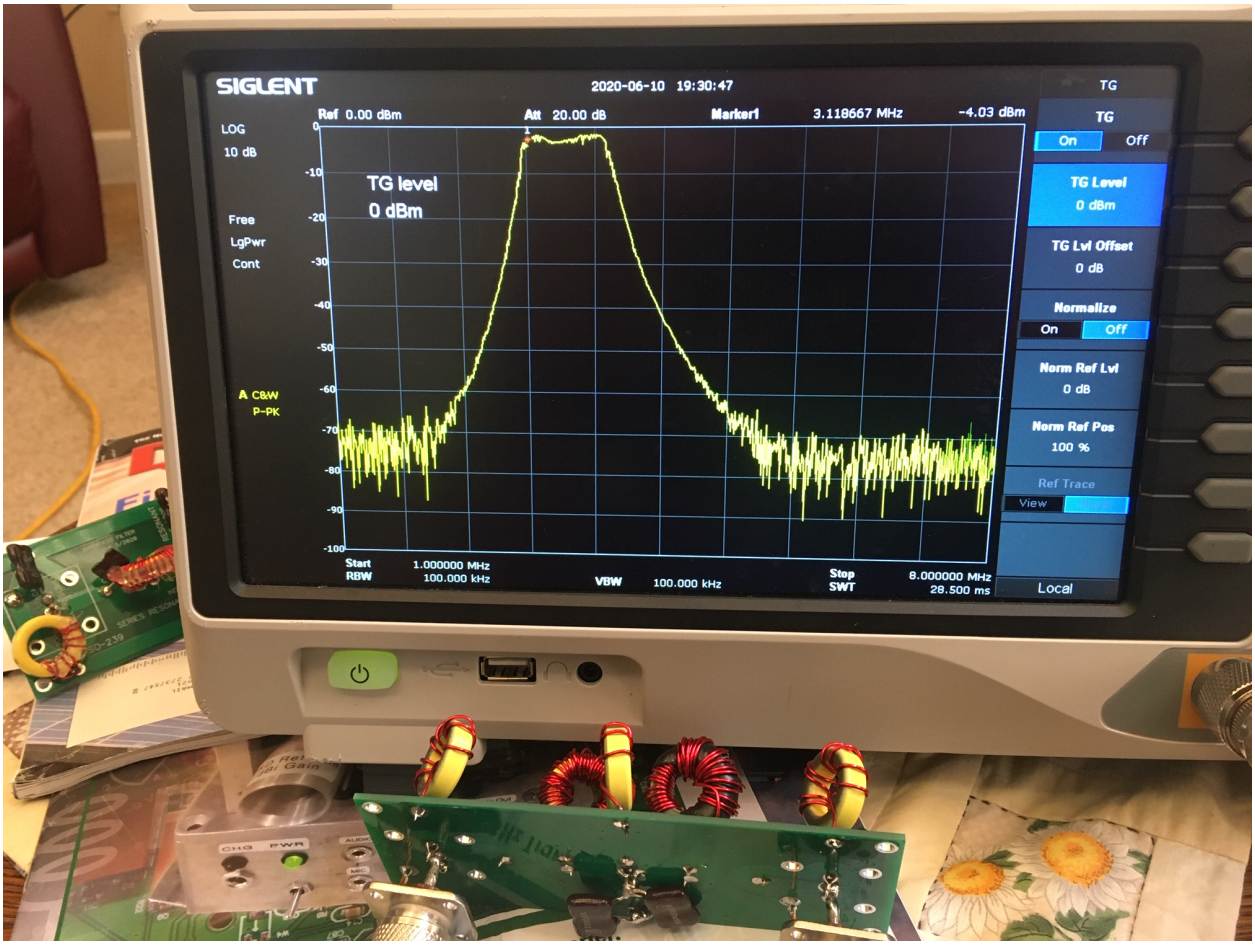
- Multiple improvements were made in volunteers' understanding of the ICS division of labor.
- Setup was completed in only 2 hours, including antennas.
- Tear down was completed in 58 minutes
- Multiple new operators gained valuable experience and training by participating in shortwave transmissions, including Judy Gardner, Carolyn Tann-Starr, Duke Bailes and Judith (Rosemary) Jones..
- Microwave networking was validated as a solid success for moving data in and out of the reinforced EOC building
- Battery based operations of a high power shortwave station at the EOC were successful for 24 hours.
- Amplified short wave transmissions were validated as much more successful.

- Interference issues between the powerful stations only 200 yards apart were basically nullified by planning and asset creation.
- The volunteer Incident Commander got valuable experience educating and being interviewed by TV reporters.

## Primary Areas for Improvement

- Battery life operating the vacuum tube amplifier in the EOC Station #1 was limited. A way to operate with an external amplifier powered by an outside generator would significantly improve the operation.
- Participants zeroed in on FT8 digital operations almost exclusively; need to develop more diversity of operation to include CW, other forms of digital, more voice operation.
- Stations stuck mainly to 80/40/20 meters; making better use of 160, 15 and 10 would be an improvement and also offer more valuable experience to participants.
- The PIO VHF tent was unable to reach any distant gateways in town without using a digipeater (not allowed under the Field Day rules) – a higher VHF antenna at the field site would be necessary (The tower mounted antennas at the EOC do well).
- Participants need to try DIFFERENT roles next year to broaden their leadership potential.

This document is prepared in order to help our group improve our emergency communications deployment abilities even more, and to assist those who will be planning the event next year.




Magnificent 80 meter band pass designed by John Trites N05X

# Section 1: Event Overview

## Event Details

### Event Name
2020 ARRL FIELD DAY

### Type of Event
Full Scale Event/Contest

### Event  Start Date
June 27, 2020

### Event  End Date
June 28, 2020

### Duration
30 hours

### Location
Alachua County Emergency Operation Center backup radio room, and vacant land associated with the Alachua County Sheriff Dept.

### Sponsor
Alachua County ARES, a component of the American Radio Relay League (ARRL); North Florida Amateur Radio Club.

### Program
Amateur Radio Emergency Service

### Mission
Communications Support

### Capabilities
VHF local communications, analog voice and digital (AX.25 packet)

HF local and national communications, analog voice and digital (PSK31, WINLINK)

Radio Email to anywhere, via WINLINK

### Scenario Type
Amateur Radio Emergency Preparedness Contest

## Event Planning Team

Gordon L. Gibby KX4Z
Jeff Capehart W4UFL
John Trites NO5X
Leland Gallup AA3YB
Judith Jones KI4QBZ
Susan Halbert KG4VWI

## Participating Organizations

**Alachua County, Florida**
Emergency Operations Center

### Number of Participants

- Players - 13
- Controllers - 0
- Evaluators – -

**AMATEUR RADIO SATELLITE COMMS PRACTICE**

# Section 2: Event Design Summary

## Event Purpose and Design

For scores of years, the American Radio Relay League has sponsored an annual "Field Day"" event/contest on the 4th weekend of June, encouraging individuals and groups to practice emergency type communications in the setting of an amateur radio communications contest. The scoring is a combination of points for desirable planning and operations activities, plus points for every connection made ("contact") to other participants at distant sites with successful bidirectional transfer of a simple message, giving the type of operation at each end, and the assigned "section" in the ARRL organization.

For our group, the exchange we had to transmit and receive acknowledgment for, was

2F NFL

because we ran TWO transmitters at an existing EOC site (Category F) and are in the North Florida ARRL section.

Our group has never formally participated in this Field Day event before, although many of us have participated with the organized effort of the Gainesville Amateur Radio Society.

Due to our desire to further develop ICS-style well-planned emergency communications efforts, and to particularly better develop the communications abilities at the Emergency Operations Center, we decided this year to carry out a fully separate Field Day event as our own club operation and invited members to participate in either or both club's efforts, maximizing the participation of all local amateurs in this worthy event.

When it because clear that at least some form of social interaction, albeit with masks etc., was going to be allowed by the authorities in our County, permission was obtained from the Emergency Manager for carefully controlled usage of the Emergency Operations Center, and from the Chief Deputy of the Alachua County Sheriff's Dept for usage of a vacant, but fenced, field on the north west corner of the Sheriff Headquarters.

By national Field Day Rules, the entire operation had to be carried out within a 1000 foot diameter circle. Satellite maps were used to guarantee compliance with this rule.

There was an additional concern this year as semi-organized "protest" marches had been carried out all over the nation, many with violence, and there had been some activity in Gainesville and the non-zero probability that such marches would extend to the Alachua County Sheriff's headquarters. Security plans for such an event were briefed to the group so that proper preparations were carried out.

Based on a solid recommendation from John Trites NO5X, that a dress rehearsal would be crucial to iron out problems, the planing included just such a dress rehearsal.

Gordon Gibby KX4Z privately developed a group of volunteers who carried out an intense two weeks' of planning and then presented the written plan to the larger NFARC group, where it was enthusiastically adopted. The planning group included:

Jeff Capehart W4UFL, PIO

John Trites, NO5X, Planning Section Chief

Leland Gallup, AA3YB, Operations Section Chief

Rosemary Jones, KI4QBZ, Logistics Chief

Susan Halbert KG4VWI, Finance and Accounting Chief

as well as

Jim Bledsoe KI4KEA, Asst. PIO and Deputy Operations Chief

Wendell Wright KN4TWS, Deputy Operations Chief

The 26-page Incident Action Plan included:

Full explanation of the event and the location and equipment for each station

Satellite pictures to show placement

Time-scripted tasks to accomplish not only planning,, but execution of the dress rehearsal, media notification, full scale event, and all required activity to accomplish bonus point items and submission requirements

List of assets required for positioning

The Full Incident Action Plan is included in an Appendix.

A particular issue was the requirement for tcp/ip networking to allow a unified contact logging system using the popular N3FJP software. One station was located in a secure facility with very thick, reinforced walls, while the other major shortwave station needed to be 200 yards away, across a busy parking lot, in a vacant field. Moving high speed network data in and out of the EOC in a relatively secure fashion against possible interruption by protesters or malefactors as an issue. This was solved by using a ham-radio specific AREDN-based microwave network consisting of three off the shelf Ubiquity mesh nodes, operating a +28dBm power levels, 5 MHz bandwidth. To make easier connection from logging computers, the Ethernet (cable) output from the end nodes was then plugged into Tenda $15 home routers acting as Access Points (an option within the Tenda operation software) and the AREDN software provided DHCP delivery of appropriate IP numbers to logging computers as requested. This system utilized a 13dBi gain Yagi at one end, and +10 dB internal antennas on the opposite end, and at the relay station (both pointing toward the YAGI at the far end) – and functioned perfectly throughout the entire event, despite a thunderstorm.

For security reasons, further operational details and exact measurements of wall absorption made by our teams are not presented in this document.

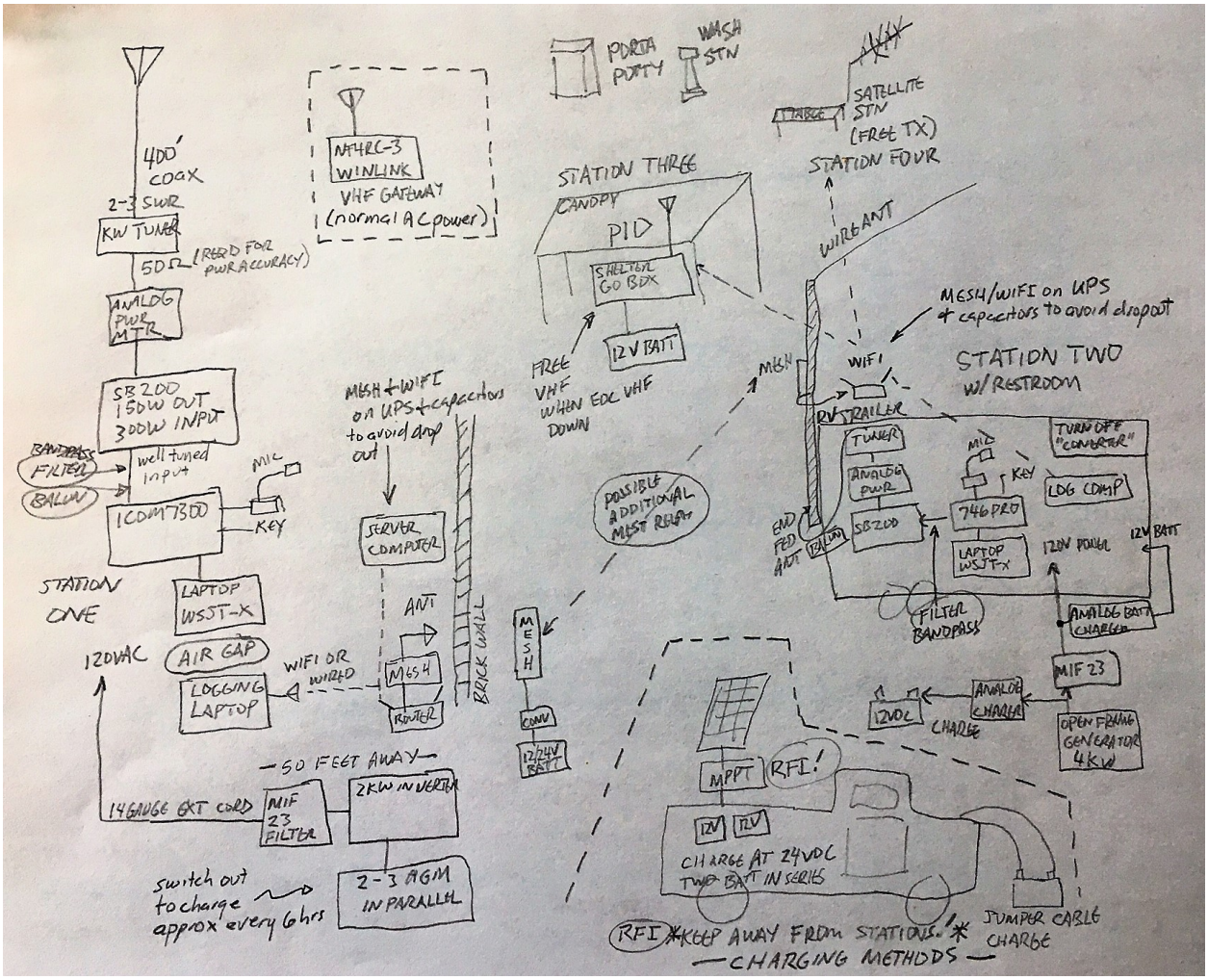
ARRL Field Day rules allow for bonus points if emergency power is used for all transmitters throughout the event. However, for EOC-based stations where generator backup power is usually available, the requirement is relaxed to merely requiring testing of the backup generator during the field day period. Unfortunately accomplishing that testing proved impossible for our group, and thus we had to operate both stations on emergency power --- and are not able to bring extension cords through the secure doors of the EOC facility from a safely positioned generator outside.

The only solution to that issue for the EOC station was to use batteries. We wanted to obtain the maximum power in the intermediate class (150 watts output) and our amplifier was a vacuum-tube based system with filaments that continuously consumed 50 watts just to stay lit. The amplifier required over 400 watts of power all told to achieve the 150 watt output and then power was needed for additional systems related. We utilized a Xantrex 2kw sine wave inverter which claimed that we were actually consuming 1100 watts (possibly due to a poor power factor) – and in order to power that inverter we provided 75-ampere Power Poles on six batteries and on the inverter, so that we could run three AGM heavy duty 75-Ahr class batteries in parallel.

In order to gain the solar power bonus points, we developed a pickup-truck based solar power charging station with a capability to simultaneously charge two 12 volt batteries at 10 Amps each continuously. Unfortunately we had a thunderstorm in the afternoon of the Field Day but we had already charge one complete battery pack. We judged that the MPPT controllers were in need of additional capacity; we do not believe we fully utilized all the solar power that was available.

2 Solar Panels Secured to Pickup Truck, combined power approx 500 watts. However our MPPT controllers were only able to take advantage of approximately half that power due to temperature limitations. This could be improved with larger MPPT controllers.

## DIAGRAM OF ENTIRE ASSET PLAN FOR FIELD DAY EVENT:




## OBJECTIVES

| No. | Item |
|---|---|
| 1 | Hold an enjoyable and educational event, with the goal of increasing the volunteers who are wiling and capable to provide advanced backup communications. |

| | |
|---|---|
| 2 | Score the most points possible without overtaxing our volunteer participants |
| 3 | Study the network data options through the EOC wall |
| 4 | Increase the familiarity of our volunteers with the ICOM 7300 and with our vacuum tube linear amplifiers |
| 5 | Increase our familiarity with the Sheriff Go Box |
| 6 | Increase our familiarity with the ICS system |

## Timeline Summary

***Wed, May 13 –*** email proposal and response to utilize the EOC for a Field Day Event

***MID MAY***
Recruitment of volunteer "Section Chiefs" and initial planning to create an incident action plan for a Field Day.

***By May 25, 2020***
First completed version of an Incident Action Plan – 14 pages of documentation.

Extensive microwave measurements by John Trites, Earl McDow and Leland Gallup

***June 10, 2020:*** Plan is officially approved by those attending the NFARC meeting

Furious asset construction to allow battery operation of a vacuum tube linear amplifier and consumer wifi connection to the successful microwave MESH system.

***June 20 2020***
Full Scale Dress Rehearsal begins with Bob Guertin towing the generator trailer and Gordon bringing the RV, Rosemary's logistics supplies coming via her vehicle and Wendell's truck – and multiple other volunteers.

HF antenna is positioned E-W after several slingshot attempts. PIO Tent goes up in the clearing, is found to be VERY HOT. Practice deployment of the water hose. Hours of setup and practice and measurements of signal levels between the two stations, on the same frequency and on different frequencies. Practice, practice, practice. The group finishes up in the early afternoon. A list is subsequently compiled of the issues discovered.

***June 27 2020***
The crew arrives at 0800 and the entire setup is completed within 2 hours.
Informal training courses then begin, covering FT-8 operation, linear amplifier operation, charging systems, inverter system, batteries, contest savvy, satellites.

Contest begins at 1400 and a few contacts are made before an electrical storm forces everyone off the air. The first of two TV camera-persons is already there. An hour is spent with each of two reporters, answering all their questions and providing taped interview.

After the electrical storm, HF operations begin again and continue through the night and into the next day. VHF demo operations are conducted with the Sheriff's go-box, and the remote winlink gateway is set up and operates over both VHF and microwave frequencies; the team uses the microwave (ham radio frequencies) to move radiogram traffic for bonus points.

Multiple newer operators are getting experience on HF radios in the contest.

Sunday June 28 2020
It was difficult to get people to shut down operations on Sunday at noon – Leland is still pounding out 40 meter contacts at the RV all the way until just at 1300.

Everyone pitches in for tear-down and it is completed at both stations in less than an hour.

***June 29 2020.*** ***Gathering*** all the documentation from so many sources as required for the web based submission, John Trites gets it all done by early evening. The team has turned in a very respectable (but not stellar) score.

Deployable Winlink Gateway – VHF & Microwave

Susan Halbert KG4VWI was primary in moving radiograms through this system, with help from several others.

# Section 3: Analysis of Objectives / Results

| No. | Item | Outcome | Recommendations |
|---|---|---|---|
| 1 | Hold an enjoyable and educational event, with the goal of increasing the volunteers who are wiling and capable to provide advanced backup communications. | Everyone appeared to have a good time. Multiple volunteers got much more familiar with both HF and higher power communications. | See detailed list in Appendix. |
| 2 | Score the most points possible without overtaxing our volunteer participants | Not only did we make hundreds of contacts – even on 10 meters, where we have much less experience, but we succeeded at bonus points in all of these areas:<br><br>Power multiplier for limiting to 150 Watts output..<br>100% Emergency Power<br>Media Publicity<br>Public Location<br>Public Information Table<br>Message Orign. Sct. Mgr.<br>Message Handling<br>Alternate Power<br>W1AW Bulletin (copied by at least two volunteers)<br>Educational activity<br>Site visitations | Try to get even more operators to become comfortable next year.<br><br>Better define who will capture W1AW bulletin and try for many more.<br><br>Better advertise which format documentation needs to be provided.<br><br>Need more practice and assets creation for amateur radio satellite communications. |
| 3 | Study the network data options through the EOC wall | Our microwave mesh network performed flawlessly, and the consumer WIFI terminations at each end made it very easy to connect logging computers. | Add a bit more battery capacity to the relay station, which died at bit before the contest was over, yet the network mesh |

| | | | |
|---|---|---|---|
| | | | continued to function. |
| 4 | Increase the familiarity of our volunteers with the ICOM 7300 and with our vacuum tube linear amplifiers | Multiple operators became very familiar with the 7300 and with the SB-200 vacuum tube amplifiers used at both stations.<br><br>This event also served to prove the great performance of the "chigger" antenna in the woods south of the EOC. | |
| 5 | Increase our familiarity with the Sheriff Go Box | We developed the ability to computer-program the radio and several volunteers got to use it during the event, however the outreach was somewhat limited. | Schedule additional training on the Go Box and provide information how to power it from 12V batteries as well as AC sources. |
| 6 | Increase our familiarity with the ICS system | Although this was a stumbling block at the beginning, our leadership became much more accustomed to the roles of each portion of the ICS framework.<br><br>In particular, this made the submission of the final scoring by the Planning Section Chief far better streamlined and more easily successful. | Consider recruiting DIFFERENT people for each Section next year as we want more broadly trained leadership. |

Total op time (breaks > 30 min deducted): 18:26:05

Total op time (breaks > 60 min deducted): 20:10:56

Avg Qs/Hr (breaks > 30 min deducted): 13.5

## Total Contacts by Band and Mode:

| Band | CW | Phone | Dig | Total | % |
|---|---|---|---|---|---|
| 80 | 0 | 1 | 44 | 45 | 18 |
| 40 | 0 | 1 | 137 | 138 | 55 |
| 20 | 0 | 10 | 31 | 41 | 16 |
| 15 | 0 | 0 | 23 | 23 | 9 |
| 10 | 0 | 0 | 2 | 2 | 1 |
| Total | 0 | 12 | 237 | 249 | 100 |

Total Contacts by State \ Prov:

| State | Total | % |
|---|---|---|
| NC | 31 | 12 |
| FL | 26 | 10 |
| GA | 19 | 8 |
| TX | 14 | 6 |
| TN | 12 | 5 |
| VA | 12 | 5 |
| AL | 10 | 4 |
| CA | 10 | 4 |
| NY | 9 | 4 |
| PA | 8 | 3 |
| IL | 7 | 3 |
| MD | 7 | 3 |
| OH | 7 | 3 |
| IN | 6 | 2 |

| | | |
|---|---|---|
| SC | 6 | 2 |
| AZ | 5 | 2 |
| MO | 5 | 2 |
| NJ | 5 | 2 |
| LA | 4 | 2 |
| AR | 3 | 1 |
| KY | 3 | 1 |
| MA | 3 | 1 |
| MN | 3 | 1 |
| ON | 3 | 1 |
| UT | 3 | 1 |
| WI | 3 | 1 |
| | 2 | 1 |
| DE | 2 | 1 |
| IA | 2 | 1 |
| MS | 2 | 1 |
| NH | 2 | 1 |
| OK | 2 | 1 |
| WV | 2 | 1 |
| CO | 1 | 0 |
| CT | 1 | 0 |
| KS | 1 | 0 |
| MB | 1 | 0 |
| NE | 1 | 0 |
| NT | 1 | 0 |
| OR | 1 | 0 |
| RI | 1 | 0 |
| SD | 1 | 0 |
| VT | 1 | 0 |
| WA | 1 | 0 |

Total = 43

Total Contacts by Operator:

| Operator | Total | % |
|---|---|---|
| KN4TWS | 62 | 25 |
| KX4Z | 60 | 24 |
| AA3YB | 59 | 24 |
| W4UFL | 18 | 7 |
| K4DF | 16 | 6 |

```
KN4WIQ          13      5
W4JIR           11      4
K4ZSW            8      3
                 1      0
KM4EVZ           1      0

Total = 9
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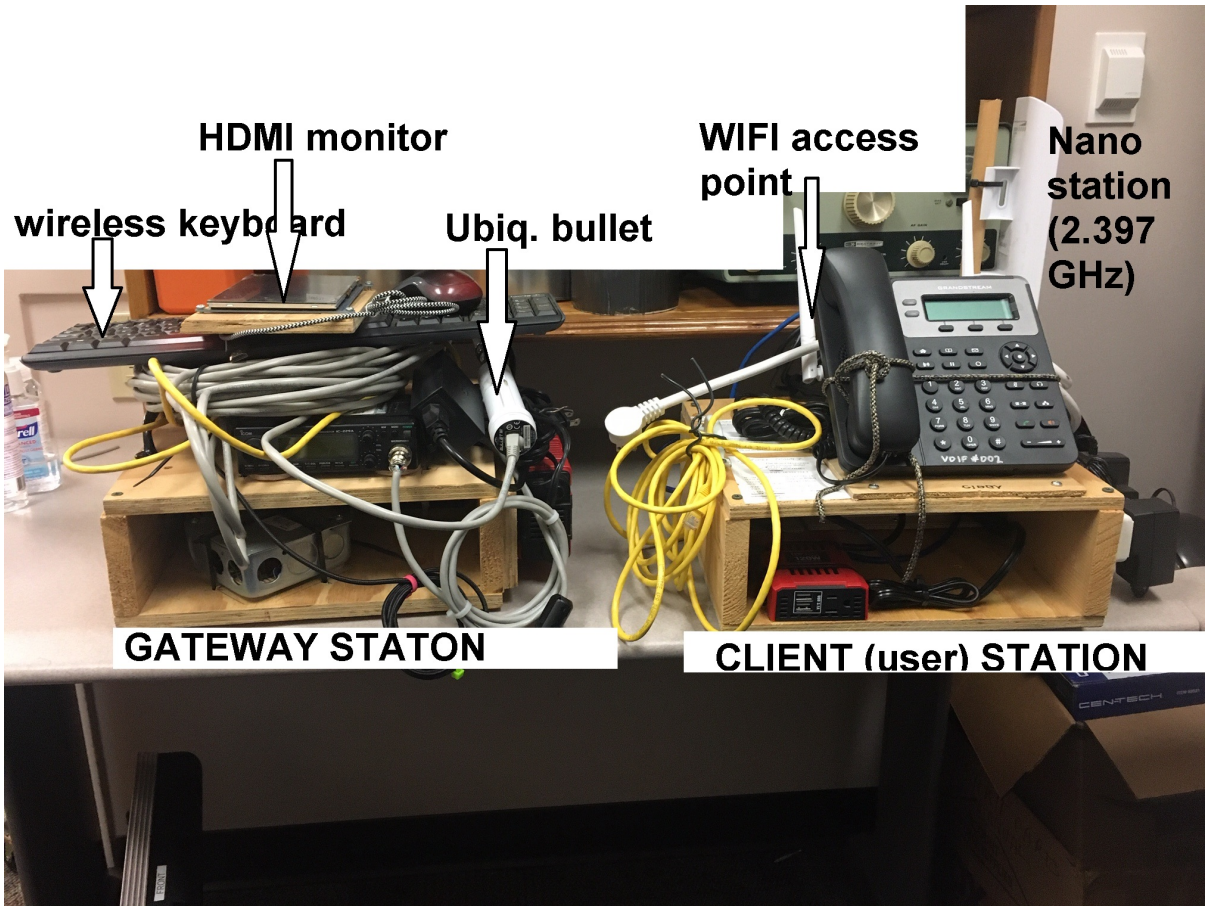


Staged equipment at the EOC prior the day of the Event.

We know of one additional station reporting their contacts (>60) affiliated with our submission (KK4INZ)

**An estimate of the total volunteer man-hours poured into this event would be:**

| | |
|---|---|
| Preparation: | 80 man hours |
| Dress Rehearsal | 8 persons x 5 hours = 40 man hours |
| Field Day Event: | 14 persons x 10 hours = 140 man hours |
| Documentation/Review | 12 persons x 1 hour = 12 man hours |
| | 1 person x 5 hours = 5 man hours |

TOTAL: 277 man hours

Based on evaluation of last year scores from Gainesville Amateur Radio Society, and this year score submissions, we may have doubled the total amateur radio contact completion as a county this year as result of two different groups.

# Section 4: Conclusion

Our first Field Day as a club was a huge success in many, many ways. We learned more about the Incident Command System, we developed many more radio assets, and we improved our skills considerably, particularly among those newest to operating. We developed systems and knowledge that would be a benefit to the Emergency Operations Center in the event of a severe communications emergency Many more of volunteers became accustomed to the HF equipment at the EOC, particularly the new radio and new amplifier.

# Appendix A
# Improvement Plan

| No. | Item | Comments / Completion |
|---|---|---|
| 1 | Do arrive at a FINAL Incident Action Plan before the date of the Event. | |
| 2 | Provide either an executive summary or use an ICS204 to break out the tasks individually for each Chief. | |
| 3 | Start more like 3 months out instead of 6 weeks out. | |
| 4 | Work our better ways for people to participate in both the EOC and the GARS field day efforts. | Not having a pandemic during Field Day would be a good first step. |
| 5 | Post station callsign on the ARRL hashtag and Facebook to get more understanding of your effort and thus more ready contacts. | |
| 6 | Keep all tents out of the direct sun as much as possible. | |
| 7 | Provide more training to the participants on the RULES and also why we made various decisions. | |
| 8 | Encourage Section Chiefs to closely follow the Incident Action Plan so items don't' get missed and are timely accomplished, particularly invites to all officials. | |
| 9 | Provide bullet-pointed or easier to grasp documentation. | |
| 10 | Put more information in the text of news emails, as people don’t always read the attachments. | |

| | | |
|---|---|---|
| 11 | Spread out the loads of people having to cart stuff to the site more evenly. | |
| 12 | Provide hard copy of the planning materials at the site, and water protected. | |
| 13 | Provide additional training on raspberry pi and winlink server systems. | |
| 14 | Improve the homemade brochure to fold well and not wilt so much in the humidity. | |
| 15 | Provide signs along the sidewalk (e.g. Realtor signs) | |
| 16 | Provide wireless mice as the touchpads on laptops don't perform well in high RF fields. | |
| 17 | Provide more FANS in tents!! | |
| 18 | Provide night LIGHTING | |
| 19 | Encourage additional generators, but test them for RFI and minimize possible interference. | |
| 20 | Provide more (adequate) space for PIO brochures | |
| 21 | Placards for the stations were great – continue that. | |
| 22 | Provide additional TENT SPACE for people during thunderstorms. | |
| 23 | Improve ability to read power usage (both DC and AC) | |
| 24 | Left rear trailer light of utility generator trailer is intermittent. | |
| 25 | Provide coffee / refreshments (great job this year!!) | |
| 26 | Add capacitors to the power lines of the consumer WIFI's – even with UPS's they burped during flickering power. | |
| 27 | If the amplifier must still be run from batteries, provide ADDITIONAL | |

| | | |
|---|---|---|
| | CHARGING CAPACITY | |
| 28 | Attempt to provide amplifier outside the EOC building and power it from an external generator | |
| 29 | See if the EOC generator test can be co-scheduled with the Field Day period. | |
| 30 | Solar panel mounts for truck – improve to make easier to assemble. | |
| 31 | Provide better labeling to know which batteries are charged / discharged / in use | |
| 32 | Provide additional voltmeters | |
| 33 | Weather Watch radio at all locations. | |
| 34 | Conventional generator still glitched and lost power output even with 30A breaker – the breaker never popped, suggesting this a field circuit issue | |
| 35 | Provide more WIFI hotspot options for the remoted WINLINK gateway, or provide for its better location beforehand. | |
| 36 | Deployable winlink gateway is not waterproof, so provide protection if it is to be used outside. | |
| 37 | If using winlink deployed gateway, provide easier way to power down. | |
| 38 | Winlink client mesh station – provide better techniques to pass dhcp numbers predictably. | |
| 39 | Provide solution for the N connector output of the Sheriff Go Box | |
| 40 | Additional training BEFOREHAND on SSB and FT8 procedures. | |
| 41 | Improve cable crossing on floor in RV | Power outlet has already been provided on the driver side. |
| 42 | Improve entry stairs to RV | Improved stairs have already been purchased and installed. |

| | | |
|---|---|---|
| 43 | Utilize more 2.5 gal fuel containers and fewer heavy 5 gallon, or half fill them. | |
| 44 | Encourage more use of check-in frequencies at check in. | |
| 45 | Better ties for the top fly of the tent, consider velcro ties to each side. | |
| 46 | Hold much more training on Go boxes | |
| 47 | More clear training on what constitutes a completed FT8 contact, and on secrets to running FT8 | |
| 48 | Ditch the elaborate charging records for just simple ways to indicate which batteries are charged versus drained. | |
| 49 | Look into less power-hog amplifier | |
| 50 | Diversify into PSK31 and RTTY to get more contacts. | |
| 51 | Consider spotters on receivers | |
| 52 | Better planning on support of Mesh devices (PVC poles etc) | |
| 53 | Improve capacity of MPPT chargers | |
| 54 | More training on how to send radiograms. | |
| 55 | Raise the EOC antenna from its sagging (in colder weather when the chiggers aren't there) | |
| 56 | We need a better backup antenna for the EOC for HF | |
| 57 | More training of what different modes SOUND like | |
| 58 | Add 6 meter capability | |
| 59 | Panadapter is very very helpful on sparser bands to find potential signals. | |
| 60 | Less competition in the EXTRA class bands...consider sweeping them | |
| 61 | Don't hesitate to ask for donations | |

| | | |
|---|---|---|
| 62 | Better dissemination of the exact requirements for documentation to get bonus points, and the types of files / documents requested by the submitter. | |

# APPENDIX B

## ICS Planning Documentation

**SEE:**

**https://qsl.net/nf4rc/2020/Draft3NF4RC_2020FD_ICS201_R2.pdf**

What our Dress Rehearsal at the NW area looked like.

# APPENDIX C

## FULL DOCUMENTATION

## WHAT WENT WELL – AND OTHERWISE

After Action Report – Preliminary Input
Version 1.0 June 30 2020
Version 1.1 July 4, 2020 – reflecting comments from Jeff, Wendell
Version 1.2 July 4 2020 – additional comments from Leland

File: *2020*/Field Day/IssuesDocument.odt

Generator Trailer.

| Item# | Submi t- ter | Things that worked well | Issues | Comments |
|---|---|---|---|---|
| PLANNING BEFORE DRESS REHEARSAL | | | | |
| 1 | GLG | The Incident Action Plan gave an incredibly helpful list of who needed to do what when – most detailed plan for a field day I've ever seen. | | |
| 2 | GLG | There was LOTS of input into the Planning process. | We probably should have come out with a "final" version of the document at some point... | |
| 3 | From JC | | Perhaps we should have had an executive summary or used an ICS-204 to break out the tasks for each Chief? | Our first time doing this for this large an operation. |
| 4 | LG | ICS201 made planning more concrete and people knew who needed to do what. | Would be better still to start this "3 months out" | |
| 5 | LG/JC | Doing it as an EOC good idea – things were practiced. | Class F is somewhat expected to just be at air conditioned EOC desks – but WE did a generator / trees / RV / tent more like a Class A.<br>(you don't get any points for Safety Officer!!) | Build on relationships with EOC management |
| | | Advantage for doing EOC station is to developing more relationship. | Difficult for people from either club to go visit the other station – people were busy and far apart. (the GARS people wish that there were only one station) | ?? how to avoid stepping on other toes? |
| | CF | Post your station callsign on the ARRL hashtag and Facebook page to get people interested in your station to | | Post your station callsign on the ARRL hashtag and Facebook page to get people interested in your station to get more calls. |

| | | | | |
|---|---|---|---|---|
| | | get more calls. | | |
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| **DRESS REHEARSAL** | | | | |
| 1 | GLG | Just HAVING a dress rehearsal was one of the best things we did – championed by John Trites based on his experience out west. | | HUGE CONCEPT that made things go far better for us, particularly since we'd never done this before, and were trying SO MANY new things... |
| 2 | WW | Went well | HOT TENT – | Tent got moved for the actual Field Day based on this observation. |
| 3 | GLG | Multiple issues were detected and virtually all were addressed | | Some more successfully than others. |
| 4 | LG | SWR sweep useful to show the EOC antenna still in good shape, and visual inspection also vital | | |
| 5 | LG | | Need to improve particpants' understanding of the RULES and WHY we did certain things. | |
| | | Antenna interactions measured were<br>80 meters -70 dB<br>40 meters -80 dB<br>20 meters -100 db<br>ABSOLUTELY SAFE | | |
| **PLANNING AFTER DRESS REHEARSAL** | | | | |
| 1 | GLG | The Incident Action Plan gave an incredibly helpful list of who needed to do what when | 1. Some people weren't following it and some items got missed (invites to officials, anyone?)<br>2. It didn't give enough specifics – like send PDF Files that accurately prove each individual bonus area. | 1. Need to get General Staff to review their sections more often.<br>2. Improve the writing so it is more specific on <u>how to properly document and forward documentation for each area</u>. e.g.,, need pdf? Need actual database files from N3FJP?<br>3. Would ICS-204 specific for each Chief be more useful? |
| 2 | JC | | Documentation lacked | Consider Appendix with bullet |

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| | | | bullet points / easier to digest | points, or ICS-204 or pre-document Executive Summary?? |
| 3 | JC | People will only read what is in the TEXT of an email | | Put the important stuff in short phrases in text of emails. |
| 4 | GLG | We got lots of new people more experienced at HF and digital operations. | We didn't get them in there for a long time, and we didn't get much done on CW or Phone or any other mode than FT8 | Need more training on other modes before next time. |
| 5 | GLG | There was a HUGE amount of help toting stuff to and from the site – Rosemary brought a ton, Wendell / Bob G. brought the generator trailer | Gordon seemed to have a LOT to bring…. | Can we even out these assets some way? Gordon isn't going to be able to keep up this lopsided support effort for long…. |
| 6 | JC | | People had difficulty reading online plan….at the site. | **Need the important parts on a BULLETIN BOARD of some sort…**<br><br>**Needs to be rain-protected** |
| 7 | JC | Online training on raspberry pi gateway (Beatty/deployable) | Some participants felt it was over their heads. | **?? Spend more time teaching this?**<br>**?? Give away copies of the book I wrote on it?**<br>**?? Cache the system with Susan / then rotate to new person every 4 months and let several people learn how to deploy?** |
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| **PUBLICITY** | | | | |
| 1 | GLG | WE GOT GREAT TV COVERAGE – it is even listed on the ARRL national "media hits" page. | | Jim Bledsoe arranged the invites to the media, the press release and WOW! Did he get a response! |
| 2 | JC | | We didn't get Gainesville Sun | Wonder why?? |
| 3 | GLG/ JC | Homemade brochure | Didn't fold perfectly<br><br>Paper wilted in the humidity – the GARS | Improve handout, improve printing? |

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| | | | brochure was on card stock and did better | |
| 4 | JC | | Covid-19 may have kept people from visiting | |
| 5 | JC | | Did have signs along the sidewalk to explain what we were doing | Make real-estate type signs?? Kinko's?? |
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| **LOGISTICS** | | | | |
| 1 | GLG/ JC | Porta Potty and cleaning worked well. – hand washing worked WELL.<br><br>Rosemary got some attachments, Judy provided the hose (THANKS to both!!) | | Should we cache these kinds of things with Rosemary for the next Logistics Chief to use? |
| 2 | GLG | Rosemary had a wireless mouse that made a huge improvement for the logging computer in the Trailer | The ACER logging computer and occasionally the HP communications computer touchpads wouldn't work when RF was flowing. | **Probably need to get some more wireless mice….** |
| 3 | | The PIO tent was a HUGE HIT | | Provided by Rosemary – |
| 4 | | The FAN in the PIO tent was absolutely fantastic | | We need FANS!! |
| 6 | | The LIGHT in the PIO tent worked extremely well – LED | | Provided by Rosemary – **she seems to have a KNACK for thinking of everything needed "furniture-wise" for a deployment. GO ROSEMARY!!** |
| 7 | | The little generator that ran the fan and light in the PIO tent did very well | | ?? whose generator? |
| 8 | | A LOT of people brought gasoline – we had an abundance! | **But…<br>Gordon ended up having to bring an enormous amount of** | How can we spread out the load of RADIO ASSETS so that we have a more balanced distribution of assets to bring to the mission? |

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| | | And we had extra generators! | **equipment – so much that I couldn't even remember where I had put the voltmeter and grounding lug connections later….**<br><br>It was so much that if Earl hadn't taken on multiple computers and mesh gear off my load it would have been nearly impossible to even track.<br><br>This is a real problem for me….I just can't keep providing multiple trailer loads of gear, even with the incredible help people provided to trailer it there for me… merely packing and unpacking is LOT of work. | Deployable Winlink gateways<br>Mesh gear<br>Go-box radios<br>Amplifiers<br>Travel Trailers<br>Trailers<br>Voltmeters<br>Chargers<br>Solar power charging equipment<br>Inverters<br>Power measuring equipment<br>tuners<br>SWR meters<br>Coax<br>Antennas<br>Slingshot gear |
| 9 | JC | | Inadequate table space for brochure – Jeff had an extra table | ?? Next year plan for 3 or more tables for this important function? Distribute the load – Rosemary CANNOT bring everything? |
| 10 | JC | PLACARDS for the stations and others were useful – made by Jeff | | Capture the FILES used to make these as PDF and store them on a thumb drive for next Field Day?? |
| 11 | JC | | SPACE during thunderstorm was limited – forced people very close. | ?? more options for next year? Go into vehicles? |
| 12 | JC | | Signage got wet during rain | Water-protected signage? |
| 13 | JC | AC in the travel trailer was very welcome | | |
| 14 | JC | We had plenty of chairs!! | | Good job, Logistics!! |

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| 15 | JC | | Difficult to measure power usage | 1. kill-a-watt device?<br>2. Gibby finish 12V power measuring/backup system?<br>3. LABEL AC devices with their power usage? |
| 16 | WW | Pickup/delivery of Generator utility trailer went well. | Minor problems with LEFT REAR TRAILER LIGHT – doesn't engage bulb properly. | Needs fixing…. |
| 17 | LG | Logistics provided coffee & snacks for Day 1, worked very well | | |
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| **OPERATIONS** | | | | |
| 1 | GLG | **Logging software** worked flawlessly except when the wifi at the EOC burped. The backup system appeared to be well done | | Earl did a fantastic job setting all this up. |
| 2 | GLG | **MESH SIGNAL LEVELS** Inside building transceiver, pointed toward trailer and outside pointed toward trailer (NOT at each other) – BOTH had detectable signal, and despite being off the SIDE of each other's antenna, they also had fine signal to each other. | | The mesh was a huge success. |
| 3 | GLG | The microwave MESH system worked INCREDIBLY WELL | The wifi connection into the radio room failed when the power jiggled during the thunderstorm and had to be reset | Think we need either large capacitor or batteries on the Tenda WIFI power lines and/or the mesh POE power lines – there was a UPS on those systems and we STILL had disconnections at the WIFI level (not at the MESH level) |
| 4 | GLG | RADIO FREQ QRM<br>I really didn't hear any RFI from even the inverter generator with the MIF23 filter added-- we may have | | Unfortunately I didn't test this extensively either, but I'm pretty sure I ran 80 meter digital from 5AM onward and I think I was on the inverter generator |

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| | | made a major step forward here. | | |
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| 6 | | **Solar panel charging** worked, but couldn't get past about 10 Amps on each battery (20 A total and only when STRONG SUN available)<br><br>We had about 3 other working chargers total of max 30 A<br><br>The industrial strength charger that Duke brought could do one battery at 30A and this added huge to our capabilities | We needed more charging capability. The little MPPT did OK at 10A but we had more power than that available from the panels, that never got used... | Buy better MPPT or additional of existing units??? |
| 7 | | **The homemade panel mounts** on the truck worked well, | But they take a bit to assemble!!!<br><br>And I couldn't get into the truck storage compartment with the forward solar panel installed so I couldn't get to the jumper cables<br><br>Also difficult to reach things that shifted forward into the truck bed. | How can we make this more simple / more durable?<br><br>??Mount on our Tower Trailer?? |
| 8 | JC | | Multitude of DIFFERENT Chargers | ?? how to standardize or train? |
| 9 | JC | | Limited ability to know which batteries were charged | ?? Have a Charged/ In Use/ Discharged tag?? |
| 10 | JC | | Very limited number of voltmeters available | Provide voltmeters or **have every deploying ham bring one**?? |
| 11 | JC | | WEATHER WATCH | 1. Arrange for batteries to be |

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| | | | RADIO – only Jeff thought to bring one – and it had a dead battery | checked before hand?<br>2. Add weather radios to planning?<br>3. Purchase additional one? |
| 12 | GLG/ WW | **GENERATORS**<br>Gasoline usage for the entire period to operate the trailer was somewhere around 13 gallons<br><br>Plenty of gas provided by lots of people. | | Much less than what I had expected. I think the inverter generator helped with this. |
| 13 | | We had TWO generators, and we needed them! | The conventional generator occasionally would "glitch" even tho new fuse added…. Temp. failure of automatic voltage regulation? – Circuit breaker had already been changed to 30A and was NEVER popped when this happened... | May need a 5kw conventional generator….<br><br>Can we get SOMEONE ELSE to provide assets for this next time?? |
| 14 | | WINLINK DEPLOYED GATEWAY | VERY FEW HOTSPOTS AVAILABLE – having to use mine for the gateway hotspot meant it was much more difficult for me to take photos and keep in touch with people trying to reach me (listed as media contact!)<br><br>When I'm the only one with a particular resource it can be a problem... | How can we solve this?<br><br>AT&T has pay-as-you-go plans that are as cheap as $25 for hotspots… should we get this going and then just activate for field day? |
| 15 | GLG/ JC | WINLINK DEPLOYED GATEWAY | Not Waterproof | How to protect from the elements???<br>Pelican Case?? |

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| | | | | Get it inside a vehicle next time? |
| 16 | JC | WINLINK DEPLOYED GATEWAY | No way to easily turn all on and off | Add ON/OFF switch?<br>Add inverter to provide 120 AC?<br>Add 24V output for mesh? |
| 17 | JC | WINLINK MESH | Problems with DHCP delivery – required turning on MESH well in advance, then wifi, | Can this be improved? Two switches, or instructions, or some way to make it more reliable? |
| 18 | JC | | Limited range of VHF station – Beaty still down | Needs higher antenna?<br>Might could have used EOC antenna,?<br>Not enough people skilled at high perch placement? |
| 19 | JC | | Sheriff Go Box has N Connector for ham radio output – makes for more loss or risk of not having right thing (box does include a cable, but no barrel connector) | ?? Add adapters or barrels double-females?<br>Add mag mobile antenna or something with each box? |
| 20 | GLG | Introducing new operators. We did pretty well at this with about 9-10 total operators – required a LOT of urging – Wendell is very good and non-threatening mentor | Need training BEFOREHAND on things like SSB procedure and FT8 software. | ?? More meeting time allocated next year beforehand to training techniques? |
| 21 | GLG | Wendell's Icom 746Pro worked VERY well in the travel trailer | | Thanks for volunteering it! |
| 22 | GLG | Two smaller laptops fit on the table in the trailer.<br><br>WIRELESS MICE were essential and touchpads were sometimes affected during transmitting with bad results. | Had to run cables across the floor, cover with a rug. | |
| 23 | GLG | | Entry stairs to trailer were dangerous. Gordon did a complete somersault hitting the | Replacement set of stairs ALREADY ORDERED. |

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| | | | ground. | |
| 24 | WW | Col. Huckstep provided additional LARGE fire extinguisher (small one was on trailer) | 5 gallon size is difficult to handle; recommend 2.5 gallon sizes for all if possible. | |
| 25 | WW | HF Stn 2 antenna moved without much difficulty to a tree away from the drainage pond, required much less rope. Higher too. | VHF antenna required a bit of training for some persons less experience with slingshots. RIGHT LINE important (low drag, high strength, low weight) | We need to have more PRACTICE with slingshots or related devices (Leland and others know LOTS of ways)<br><br>Gordon was running out of ORANGE braided 60-80 # fishing line, ordered more from amazon. |
| 26 | WW | Good check-in | People weren't paying attention to the ICS205, hard to reach by any method | Need better coordination of people being accessible….either by radio or by cell phone<br><br>Operations Distribute ICS-205 for hard copy or email. |
| 27 | WW | Tent placement BETTER at actual field day. | OPERATIONS:<br>noted during rain storm that better ties for the top fly would be beneficial to help keep the rain out, maybe add a couple Velcro ties to each side, does anyone sew? Possibly add a few screw anchors, we were literally holding it down. **Note**; move gear to an available vehicle with space | |
| 28 | WW | | After rainstorm, mesh crew had confusion re-establishing winlink system;<br>need more practice | |
| 29 | WW | | Recommend more hands-on training and familiarization on actual setting up go- | Jeff Capehart is taking on getting a training set up for the go boxes. |

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| | | | boxes for shelters and mesh, maybe one on one or 2-3 persons at a time. | |
| 30 | WW | Hf stations went up well and lots of training was provided to newer folks with EXCELLENT outcomes. | | |
| 31 | WW | Jeff Capehart had weather alerts covered! | Problem disseminating… | Might be done over 146.550 and also over LOGGING SYSTEM intercommunication? |
| 32 | WW | | Confusion over what constitutes a completed FT8 contact | Recommend that Operations conduct classes to make this uniform. |
| 33 | WW | | Inconsistent logging – confusion on requirements meant some contacts didn't get logged | |
| 34 | WW | Special thanks to all those that stepped up and filled the Section Chiefs positions. Going to specifically point out John Trites with a Fantastic and detailed ICS-201 and Leland Gallup and the ops team Super Job on all those measurements and pre testing, so many things they did, too much to list. Both did an amazing job with Planning and Operations. As did the other Chiefs with their Sections. Thanks to all those that participated, helped out in so many ways, provided training in so many areas and last but certainly not least, SPECIAL THANKS to Gordon for providing and bringing so much need equipment and the RV, and all the training leading up to this. | | |
| 35 | GLG | | Absolutely NO one filled out any of the elaborate charging records I had come up with – so reality is, the only thing we are | Best to just come up with a simple way to mark what is dead and what is charged, and make voltmeters readily available at both the stations and the charging locations. |

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| | | | going to get is people connecting up the batteries and checking the voltage to see when they are done | People need to know that when a flooded battery reaches 13V under charge, it is nearly full, and when it reaches 11.8 under load, it is nearly dead. |
| 36 | LG | Amplifiers were easy to use and gave us plenty of signal strength | Barefoot at EOC worked acceptably when they had to do it<br><br>The amps were POWER HOGS esp at the EOC – | We have an idea how to do this with an outside amplifier or a solid state amp – using a generator OUTSIDE – **or get the EOC to DO THEIR GENERATOR TEST!!!** |
| 37 | LG | All four station setups worked together well | | |
| 38 | LG | Predetermined band plan not necessary due to easy of communication between stations via the logging system | | |
| 39 | LG | "NFARC now has a good cadre of skilled FT8 operators!" | We missed out on more PSK31 or using the extra class portion of phone bands for easier phone QSO's | |
| 40 | LG | RFI was "reduced to virtually nil" by all the FILTERS that gordon/earl had constructed. | | |
| 41 | LG | Bandpass filters made it easy to work on nearby bands | | GLG: not certain they were necessary,, but we certainly had no difficulties!! We didn't really test the 80 digital/75 phone for the real contest |
| 42 | LG | Excellent training and mentoring of newer operators. | | |
| 43 | LG | | Had to run to home depot to get PVC pipe for a Yagi mast for the MESH at the parking lot. | Need to remember and plan for every part |
| 44 | LG/ | | (Repeated topic) | Multiple solutions: |

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| | GLG | | Power drain from batteries at EOC, running amplifiers | 1. House amplifier in vehicle OUTSIDE, run from generators<br>2. Switch to solid state amplifiers (no tuning needed) and run outside<br>3. Create remote way to operate the antenna tuner and get it and power monitor out there also – camera on them? Or control through WIFI digital stream??<br>4. Or just have a helper?<br>5. You could put the OPERATOR outside, and control the INSIDE rig by remote over the mesh…. |
| 45 | LG | | Solar charging was still not huge…. | The MPPT controllers were limiting to about 10 AM P each. We might need heftier ones. |
| 46 | LG | | Need more familiarity with how to send radiograms | Training needed. |
| 47 | LG | | The EOC antenna needs to be raised higher throughout its length….in the winter when the chiggers aren't out | |
| 48 | | | We don't yet really have a good backup antenna for the EOC | |
| 49 | Craig Fugate | FT8 was open on almost all bands – 160 to 6 meters<br>Craig learned how to POUNCE on people – if they don't answer within a call or two, he moved on. | Craig had some problems with FT8 – red light on, but nothing transmitting?? Problem with Icom 7300 driver??? Something to do with the settings in the computer – turns on the transmitter but doesn't modulate?? | Craig's solution was to reboot everything. Not clear if specific to his computer. |
| | Craig | Click and pounce – Craig's conclusion was that if they don't respond on the FIRST | | Remember to unplug your mic if you are allowing input from both mic and acc in USB mode. |

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| | | call….you aren't going to get a response from them.<br><br>NFARC – our technique was to find the STRONGEST signal and pounce on them, figuring that likely they had the strongest path propagation from us.<br><br>Craig was doing DX easily this week with FT8 | | |
| 50 | CF | Craig was doing 6 M early in the evening. On 10 meters, Craig was figuring out propagation by listening to the signal. Very amazing to make contacts all the way from 160m all the way to 6 meters.<br><br>WHAT FREQUENCY ON 6 meters? 50.313 – the first one listed in WSJ%-x<br><br>40 feet at the center, ends at 25 feet, center fed antenna with MFJ tuner to augment the internal tuner, worked better.<br><br>Craig – be the FIRST to respond to them – speed of the draw.<br>Craig saw his station work two stations simultaneously!!!<br><br>Craig was using internal features of FT8 to have it tell him if he had already made a contact with that station | Craig was having problems identify which sounds were which mode. | Craig was making connections even to signals of -20 db – he would just CLICK on them and see what happened.<br><br>We need to learn how to make the logging from the FT8 go right into the N3FJP.<br><br>"If you want to do a lot CQ" you need to "Advertise your station" Either get some advertisement about your station (build interest) |
| 51 | CF | | | GO TO THE OUTSIDE BANDS |

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| | | | | – Far less congested and you make contacts quicker!! |
| 52 | CF | Craig had a pan adapter – he was using an SDR so he could see everything. | | Suggestion to use more RECEIVERS to find where there is more activity – give tips to people.<br><br>Pan adapter allowed him to literally click on SSB stations to see how strong they were. |
| | | Craig did all his logging on WSJ5-X whereas we were logging separately – much more work. | | |
| **FINANCE & ACCOUNTING** | | | | |
| 1 | | Our "donations accepted" method of paying for items appeared to work well. | I worry that some hyper-responsible types feel they are personally responsible if donations don't show up | NEVER FAIL TO ASK FOR WHAT YOU NEED!! "Ask and ye shall receive" – good advice. |
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| **PLANNING AFTER EVENT** | | | | |
| 1 | GLG | **John Trites got everything organized very efficiently** and dealt very well with the confusing ARRL interface. He was very clear on exactly what he needed. | We had some difficulties getting people to send in the format he requested (PDF). Mainly a lack of practice with free office software | ?? Shall we have a training session on PDF?<br>?? Worth it for us to purchase one copy of ADOBE so we can edit PDFs and give to the Planning Chief each year? |