Hurricane Update and Resources for PIOs

**Scott Roberts, NFL Section PIC**
Kk4ecr@gmail.com

The information below was compiled by Bob Inderbitzen, NQ1R and the ARRL Public Relations Committee. It can be a great asset to EC's and PIO's when preparing to be activated for a hurricane, wildfires, or other natural disasters. Please feel free to use this and pass it on those in your groups who will benefit from it.

Each year, hurricanes and wildfires call on well-trained radio amateurs who serve our communities and agency partners with a wireless emergency communications capability, when needed. The Amateur Radio Emergency Service® (ARES®) consists of volunteers who have registered their qualifications and equipment for communications duty in the public service when disaster strikes. As PIOs and PICs, I encourage you to follow the preparations, activations, and response from ARES volunteers during this current string of hurricanes.

PIOs play an important role in promoting amateur radio throughout an emergency or other crisis, and reporting on the good work of our fellow volunteers. PIOs can even be effective gatekeepers between ARES volunteers and the media, allowing operational people to keep doing their job during an emergency.

Tropical Storm Laura is expected to make landfall as a Cat 1 or 2 hurricane on Wednesday but Laura has already made itself well known in the Caribbean. ARRL Headquarters Emergency Response Team is monitoring the storm activity, and Section leaders are being encouraged to share activation reports, news of ARES net activations including frequencies of operations, names of ARES groups called up, shelters being opened and staffed, numbers of operators involved or needed, etc.

ARRL News has posted the following stories during the last 24 hours which include summaries from the Hurricane Watch Net, Section Emergency Coordinators, Section Traffic Managers, and ARES teams on stand-by.
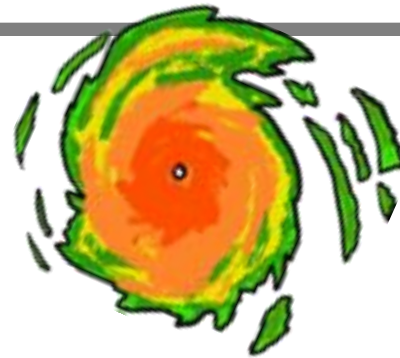
- 08/24/2020 | As Marco Weakens, Attention Turns to Laura, Which May Become a Category 2 Hurricane
- 08/23/2020 | Hurricane Watch Net to Activate as Louisiana Braces for Marco and Laura

Additionally, ARRL Headquarters has pre-positioned emergency [Ham Aid] radio communications kits with volunteers in Louisiana.

Want a QST NFL Reminder?

Click on the email below and I'll put you on the reminder list that lets you know when the monthly input is due, and when the newsletter is posted on the website arrr-nfl.org.

Email: **Sign Up Here!**

What's Inside….

Email your QST NFL input to n4gl.marty@gmail.com
Marty Brown, N4GL, Editor

News and media hits mentioning the response of radio amateurs should be emailed to newsmedia@arrl.org. You can also share your media hits via this reflector – so can we can all learn together. It's helpful to see what attracts the attention of the media. Media hits are regularly posted by ARRL at www.arrl.org/media-hits.

PIOs and PICs in affected and nearby Sections and Divisions are encouraged to follow information updates from their Section Emergency Coordinators and Section Managers. Remember, it's always best for PIOs and PICs to have a well-established relationship with Section leaders and ARES groups BEFORE an emergency. A well-coordinated effort ensures PIOs and PICs get the information you need to share with news and media outlets.

Finally, if you are a designated spokesperson for an ARES group or other Section Emergency group, make sure you have some basic info before speaking with the media. Review public information with served agency PIOs when possible and when required. Here's a fill-in-the-blank summary that can be cut-and-pasted into your own document.

Media Information Summary

1) The _____ Amateur Radio Emergency Service (ARES®) has been activated to assist with primary/auxiliary emergency communications for this event. The group is coordinated by _____ (name of EC).

2) _____ ARES is working with the _____ county/city/town Office of Emergency Management and the following agency(ies):

_____
_____
_____

3) The group is providing communications links between: _____

4) Amateur Radio operators are stationed at the following locations to provide communications assistance: _____

_____(#) of Amateur Radio operators are at the sites
_____(#) of additional Amateur Radio operators are on standby for additional communications needs

5) For more information contact

Public Information Officer for _____ (Name of County)
_____ name of PIO
_____ e-mail
_____ mobile phone number
_____ current location
_____ Name and contact info for Section Manager (optional)

Public Information coordinator for Northern Florida Section

Scott Roberts
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(904) 759-7812

The Amateur Radio Emergency Service® (ARES®) is a program of ARRL, the national association for Amateur Radio®

National Media Contact for ARRL is:

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rinderbitzen@arrl.org
www.arrl.org

Florida ARES Online Conference

Florida ARES will hold an online conference on Saturday, September 19th, 2020. Everyone is welcome, but space is limited. Please visit fl-ares.org to register and get updated information. Registration will open shortly.

8:30 am - 9:00 am EST / 7:30 am - 8:00 am CDT (TBA)
9:00 am - 10:30 am EDT / 8:00 am - 9:30 am CDT (TBA)
11:00 am - 12:30 pm EDT / 10:00 am - 11:30 am CDT (TBA)
1:00 pm - 2:30 pm EDT / 12:00 pm - 1:30 pm CDT (TBA)
3:00 pm - 4:30 pm EDT / 2:00 pm - 3:30 pm CDT (NFL, SFL & WCF ARES SEC's will cover past and current events in ARES Florida, discuss future changes and have a Q&A session at the end.)

If you have any questions, contact Karl K4HBN k4hbn@arrl.net.

Northern Florida Section SEC Report		July 2020
Report	Counties Reporting	Counties in NFL
Number of Counties Reporting	17	43
Total Number of ARES Members		577
	Number of Events	Hours
Exercises & Training Sessions	129	676
Public Events	3	18
Emergency Operations	3	28
Skywarn Operations	21	7
Total	156	729
Comments		
We have three more months of hurricane season. The first week of September is the height of the season. We need to stay prepared and watch the Atlantic closely. ARES in Florida will be holding an online conference on September 19th, 2020. We will have four-session, two in the morning and two in the afternoon. The presentations are TBA. Check arrl-nfl.org or fl-ares.org for the latest information and when to register. **Karl K4HBN k4hbn@arrl.net**		

Pretty as a Picture
by Bert Garcia N8NN

Appearance is everything. After finishing your electronic project and putting it in a nice case, you face the challenge of how to add panel labels that won't spoil the appearance of your successful build. You can use a tape label maker, commercial wet transfer decals, or heaven forbid, a magic marker. After Googling around the Internet, I've found a neat way to solve the problem of making labels for homebrew projects -- print an overlay that covers the whole panel.

Applying separate labels by any method will leave visible lines that are not attractive. If you print an overlay that covers the whole panel, there are no visible lines around the labels. I used a drawing program, a scanner, a printer, and several types of printing stock. Here's how I did it.

First, scan your panel. Figure 1 is a scan of the panel with everything removed so it will lay flat on the scanner bed.
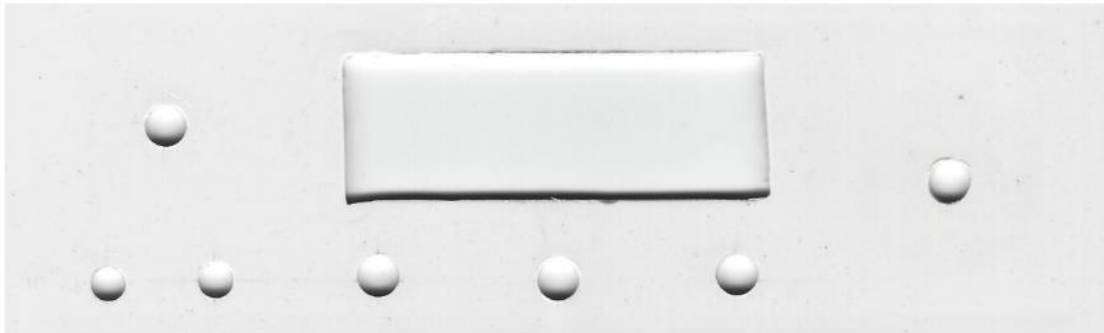

Figure 1: Scanned image of the blank panel.

Import the scanned image into a drawing program that will print an image in actual size. I used PhotoShop Elements. Microsoft Paint and Microsoft PowerPoint will not work because they do not print accurately sized images. Test your software by scanning a ruler and comparing the printed image with the ruler. If they match, you're good to go.

In your drawing program enter the label text and any other artwork you want. To obtain the correct clearance around knobs, add shapes with the diameter of the knobs. In Figure 2 I have added labels and shapes for the knobs. The knob shapes are for reference only and are removed before printing.

You can personalize your project to suit. I made a logo with my callsign and CQ DE N8NN spelled in Morse Code font to draw a line. This panel is for my QCX-40 QRP transceiver kit that I will describe in another article. Your panel overlay is only limited by your imagination!

To print the overlay, remove the scanned image and any reference shapes before printing.
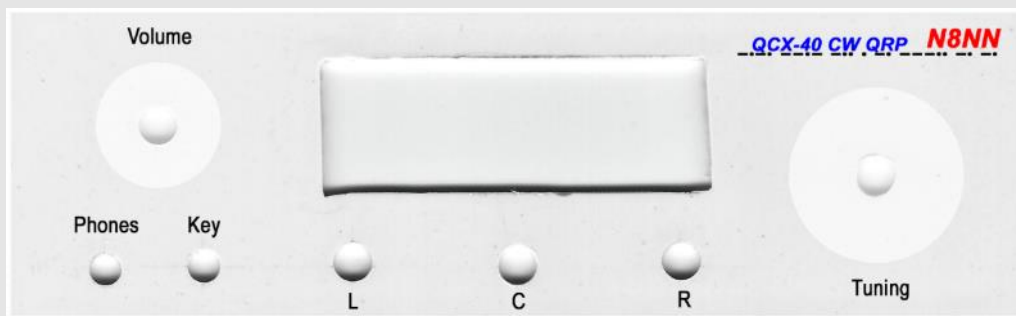
Figure 2: Labels added and temporary shapes of knobs for reference.

I used several types of media for the overlay -- Avery 4397 transparent sticky project paper, heavy card stock, and glossy photo paper. If your media does not have any adhesive, double stick tape will hold it to the panel.

Figure 3 shows the result. Figure 4 shows some imagination!

Figure 3: Panel overlay using transparent sticky project paper.

Figure 4: Panel overlay with a tropical flavor printed on glossy photo paper.

Good luck with your next homebrew project! Enjoy!

Reference:
Avery 4397 Project Paper, clear https://www.officedepot.com/a/products/393926/Avery-Full-Sticker-Project-Paper-4397/, $9.49 per 7 sheet package.

Alachua County NFARC Serves Up COVID-19 LabNLunch

By Gordon Gibby, KX4Z

Amidst copious COVID-19 precautions, Alachua County NFARC (https://www.qsl.net/nf4rc/)club members gathered on Saturday August 15th to work on the hardware portion of the **DIGITAL101 course** that ranked high in the annual planning carried out last December. Wearing masks and socially distancing as much possible, a quick luncheon at a local dine-in Burger King was followed by hours and hours of building and testing at a private residence.

146.55 simplex allowed persons who wished to stay in their cars to still partake of the updates, and an outdoor building table on the pool deck allowed great outdoor work.   Everyone was wearing masks and having great fun!

An introductory quick review of how hams have moved tones and signals of all kinds in and out of microphone/speaker/push-to-talk connections of radios all the way back to phone-patch days got the group started on the right foot. (See: https://qsl.net/nf4rc/2020/Digital101HardwareHandout.pdf)

Some worked on ARES® task book (https://arrl-nfl.org/wp-content/uploads/2020/01/Florida-ARES-Training-Task-Book-2020-R1.pdf) projects such as crimping PL-259 onto RG-8 or RG-58.   Others were putting final touches on a soundcard-isolator homebrew board. (https://qsl.net/nf4rc/2019/SmallBoxSoundCardInterfaceManual2.2.pdf) and zipped Gerber download: https://www.qsl.net/nf4rc/Tech/SouncardInterfaceV21.dip)Some were starting out on a soundcard-isolator.   We ran into a thorny issue with one board that wouldn't keep the push to talk relay "in" on transmit – appears I misread a capacitor value, a goof converting pF to uF.

A VHF handheld that required a complicated proprietary external mic/speaker plug got sorted out and properly connected to a soundcard, a project that had been stalled for months The necessary additional components were soldered to a tiny perfboard at our traditional cardboard-covered dinner table.

After lots of success on those projects, two members had HF radios and needed help getting some modes to work – especially now that the Winlink Development Team has deprecated the older WINMOR technique in favor of more modern ARDOP (free) or VARA (3rd party software, license fee to creator).   WINMOR was entangled with the ongoing Microsoft DOT-NET upgrades and routinely caused server issues at remote installations after weekly Microsoft updates.

We set up full HF radios on the living room coffee table and eventually ran coax from an available outdoor antenna. Connection issues were then sorted out by testing with the KX4Z RMS station on the 2nd floor (using lower power to avoid receiver overloads).   One member soon understood how to assemble the various software.   *Really low receive audio* turned out to be the problem another member was having; moving a jumper option on the commercial Signalink solved that and suddenly ARDOP was working great.   (And succeeded on the following Monday Florida WINLINK check-in net. Email KK4SHF@winlink.org with //WL2K first characters in your subject line to get further details.)

Members were having such a great time that we didn't get the last of them done until well after five hours of building and experimenting.   What a ton of learning goes on!

CW OPEN

Session	Date	Time
1	September 5, 2020	0000 – 0359z
2	September 5, 2020	1200 – 1559z
3	September 5, 2020	2000 – 2359z

Click Here for CW OPEN Info..

Object: Work as many CW stations worldwide as possible within each session. There are three separate competitions at three separate times — each is called a "session." Each station may be worked once per band in each session…… more

COMING OCTOBER 9th and 10th, 2020

The 55th Annual Melbourne Hamfest

and Official 2020 ARRL Southern Florida Section Convention

Melbourne Auditorium

625 E. Hibiscus Blvd
Melbourne, Florida

Friday - October 9th - 1pm to 7pm

Saturday - October 10th - 9am to 3pm

Jacksonville Amateur Radio News

Billy Williams, N4UF

The North Florida Amateur Radio Society (NOFARS) skipped August. The next meeting is Thursday, Sept. 10th. at Hogan Baptist Church, 8045 Hogan Rd.   Chances look good for an in-person gathering starting at 7pm and visitors are always welcome.

Jax Laurel offered exams on August 8th. AC4WZ reports 15 applicants with 13 new operators passing at least one element. Watch nofars.net for September test dates.

Duval ARES has been meeting online over the summer. Members tested antennas and feedlines at potential shelter sites. The weekly ARES net includes check-ins from the W4IZ 146.7 MHz repeater, 28.39 MHz SSB and digital modes starting at 7:30pm each Weds.

The Jacksonville FREE Hamfest is Saturday, October 24th in the big parking lot at Terry Parker Baptist Church, 7024 Merrill Rd. The large lot allows ample room to spread out. The fun starts at sunrise and continues until noon. Admission and tailgate spots are free. Sixty sellers attended in 2019. No auction or prize drawings are planned this year. Watch nofars.net for hamfest updates.

NOFARS HAMFEST NEWS

The Fun Starts At Sunrise

2020 JACKSONVILLE FREE HAMFEST

SATURDAY, OCTOBER 24TH

TERRY PARKER BAPTIST CHURCH PARKING LOT

7024 MERRILL RD

7AM-NOON

FREE ADMISSION

FREE TAILGATING: 60+ Sellers in 2019

FREE FCC TESTING BY JAXLAUREL VEs

SELL YOUR ELECTRONIC ITEMS

HUNT FOR YOUR NEXT BARGAIN

W4SNN HOSPITALITY

MEET YOUR FRIENDS & MAKE NEW ONES

CQ CQ

It's a rainy night. What a great time to be on the HAM bands chasing DX. Keep the power going Fester!

Bob Lightner W4GJ

Hardrock-50 HF Amplifier

by Bert Garcia N8NN

I have several QRP radios, and while 5-watt QRP is fun, there are times when a bit more power can increase the enjoyment of an afternoon in the park. There are several good choices for a pair of shoes for my QRP radios, but the one that caught my eye was the Hardrock-50 (1). As its name implies, a few watts in will give you 50 watts out. That may not sound like much power, but it's only 3 dB less than your 100-watt transceiver -- that's less than half an S-unit, and probably half an S-unit less makes little difference to the ear on the receiving end.

The Hardrock-50 is a kit (2) sold by HobbyPCB in Clearwater, Florida. Without exaggeration, this is the highest quality engineered and most stable kit I have ever built…! Based on WA2EUJ Jim Veatch's design which won the ARRL Home Brew Challenge II, the design has been expanded to become a first-class amplifier.

Figure 1: Hardrock-50 amplifier front and rear views. *Photos by permission of HobbyPCB.*

Less than 5 watts in will give you a full 50 watts out on 160-10 meters and slightly less on 6 meters (3). You only need to connect your antenna cables and DC power to operate the amplifier since it has carrier-operated T/R keying with adjustable hang time to allow it to work with virtually any QRP radio. If your radio has a PTT line, you can use that to key the amplifier. PTT is probably a better choice for SSB operation. If your QRP radio has band data output like my Elecraft KX2, you can use that for automatic band selection. If you prefer direct computer control of the amplifier through its USB port, detailed instructions are included in the on-line manual.

The basic amplifier is built on three circuit boards -- a display/control front panel, a rear panel for connections, and the RF amplifier. An optional built-in automatic antenna tuning unit (ATU) (4) is available; and an optional full break-in QSK board (5) is available. I added the optional antenna tuner and QSK board to my amplifier. Construction requires soldering components and winding the toroids. The microcontroller on the front panel, the USB interface chip on the rear panel, and surface-mounted devices are pre-installed. If you plan to install the antenna tuner and QSK options, install them during initial construction rather than retrofitting them later. Alignment will require a multimeter to measure DC current, a wattmeter, and a dummy load.

The front panel display shows the operating band, temperature, DC voltage, and keying mode. When transmitting, the display shows the SWR and PEP power out along with a bar graph showing the average forward and reflected power. The display is also used to step through the 10-item menu system to set the operating parameters. The front panel controls allow you to choose the keying mode and manually select the band. Those buttons are also used to step through the menu system. The green power LED turns red when transmitting.

There is a QRP operating mode that disengages the amplifier while still allowing you to use the antenna tuner and SWR/power metering with your QRP radio. About 1 watt is required to operate the automatic antenna tuner. To operate the antenna tuner, transmit a carrier and press the Mode button. The antenna tuner will disengage the amplifier and tune using only the power from your QRP radio. After a match is found the amplifier is re-engaged. The display will show the results of antenna tuning. Tuning solutions are memorized for band/frequency and can be recalled. Tuning solutions are kept stored even if DC power is removed.
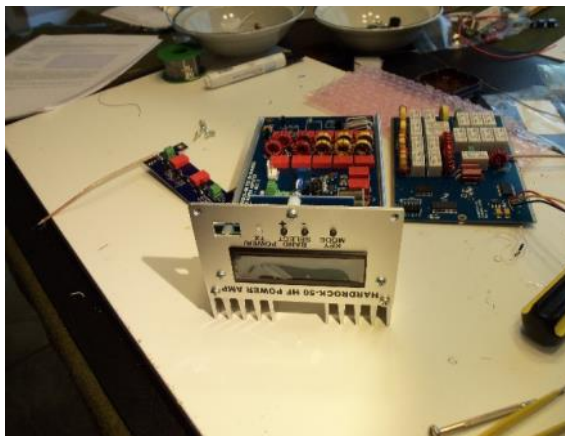

Figure 2: My Hardrock-50 in final assembly.

Figure 3: ATU mounted above the RF board.
Photo by permission of HobbyPCB.

If you have a high-power amplifier at home, you can use the Hardrock-50 to boost your QRP power to a level adequate to drive the larger amplifier to full power. The PTT line can be daisy-chained from the QRP radio through the Hardrock-50 to the larger amplifier. The Hardrock-50 has a programmable key-up delay to ensure the larger amplifier is keyed before any RF is sent to it, thus preventing hot switching. Make sure you know the PTT voltage and current requirements of the larger amplifier, so you don't damage the Hardrock-50 PTT circuit. Older amplifiers may not have compatible PTT voltages without using an interface keying device. I successfully used this feature to operate my Ameritron ALS-600 at full power with my KX2.

The step-by-step assembly instructions are incredibly detailed and include diagrams and photographs of the steps. The parts inventory includes a photograph of each part to avoid any mistakes during assembly. HobbyPCB guarantees you will have a working amplifier. If it doesn't operate after you build it, they will provide telephone support and even make arrangements to repair your amplifier. You can't go wrong building this kit!

My Hardrock-50 has given me flawless service for several years. My KX2 will drive it well past 50 watts, but I take care to keep it at 50 or below. The rugged mechanical and electrical construction make it ideal for field use. The large heatsink is barely warm after a QSO at full power. The antenna tuner has easily matched verticals, dipoles, and end-fed antennas in many locations. I routinely use auto band selection and QSK from the KX2. If your baby needs a new pair of shoes, I highly recommend the Hardrock-50 HF amplifier kit.

Specifications:
Bands - 160, 80, 40, 30, 20, 17, 15, 12, 10, 6 meters. 60 meters with optional ATU.
RF Input - 5 watts max, typically 2-3 watts for full output.
ATU Range - 10:1 SWR nominal
DC Power - 11-16 volts, 10 amps typical.
Keying Modes - standby, carrier-operated, PTT.
Compatible Radios - any QRP radio, 1 watt minimum for ATU operation.
Size - 4.25" W x 3.5" H x 7.5" D, not including switches and connectors.
Weight - 3 lbs., add 1/2 lb. for optional ATU.

References:

(1) HobbyPCB, Clearwater, FL https://www.hobbypcb.com/
(2) Hardrock-50 HF Amplifier kit https://www.hobbypcb.com/index.php/products/hf-radio/hardrock-50-hf-power-amp, $299 plus shipping
(3) 60-meter operation is only available with the optional antenna tuner
(4) Hardrock-50 ATU Kit https://www.hobbypcb.com/index.php/products/hf-radio/hardrock-50-atu-kit, $179 plus shipping
(5) Hardrock-50 QSK kit https://www.hobbypcb.com/index.php/products/hf-radio/hr50-qsk, $49 plus shipping

LARA Restarts HAM License Testing

Frank Anders, KK4MBX,

Lake Amateur Radio Association is pleased to announce that after careful consideration and with good precaution restarted its monthly in-person testing in July and exploring options for remote testing in the future. We have a lot of interest in the in-person testing and our clubhouse accommodates up to six candidates in each session. Pictured is our testing session from August with our 4 candidates and our VE team, Dave, N4NG; Glenn, AA4UC; Roger, KV4I; Frank, KK4MBX; and out engineer, Larry, N2HBX. We will continue to offer testing each third Saturday of the month.

Duval ARES Tweets for Recruits

Miller Norton, W4EMN, Duval EM/Jacksonville EOC

Here's hoping Duval ARES will get some newbies as a result of the following tweet we sent out yesterday from the Duval County / Jacksonville EOC.

The Collegiate QSO Party

Andy Milluzzi, KK4LWR

Mark your calendar! The **Collegiate QSO Party** is September 19th and 20th. It celebrates clubs at colleges and universities. It's a great time to support new hams in a friendly event. All are encouraged to participate. Details are at CollegiateQSOParty.com. I'm one of the producers of the event and alum of the Gator Amateur Radio Club, W4DFU at UF.

Homebrew PowerSwitch/SmartCharger Project Success

Inexpensive project suitable for important radio assets / club projects

by Gordon Gibby KX4Z

For more reliable battery-backup of 24/7/365 radio assets, an inexpensive MOSFET-based automatic switch between AC-powered radio power supplies and battery backups, but also providing "smart charging" of the backup battery, has been successfully designed and prototyped.

My previous method for battery backup of important radio assets (AX.25 digipeaters/nodes, RMS servers) was a combination of large 12V batteries feeding the radio/computer asset, and an over-taxed smart battery maintainer operating continuously to recharge the battery. An uninterruptible power supply for AC backup is optional. This works, but is continuously *using the backup battery*, reducing lifespan. The PowerSwitch/SmartCharger allows a typical ham radio 13.8-14.5VDC power supply to power both the radio, and keep a backup battery at optimum charge, and then almost instantly switch back and forth, if there is any disruption of the AC supply. This system could also serve simply as a smart battery charger for any of multiple types of batteries.

Battery types supported	12-14 VDC batteries including: • Flooded lead acid (e.g. lawn tractor of deep cycle battery) • Sealed lead acid • AGM • LIFEPO4 with proprietary external charger (Bioenno) • LIFEPO4 using PowerSwitch/SmartCharger as the charger (Bioenno)
Battery Capacities supported	5-50+ Amp-hour (practical limit is probably 100 Ahr)
Radio power supported	High-power MOSFETS with channel resistance of < 7 mOhm utilized: Vishay SQP90P06-07L_GE3 rated at up to 120A https://www.vishay.com/docs/62665/sqm90p06-07l.pdf ***Builder-choice of capacity (by size of heat sink chosen) to greater than 40A.*** Modest heatsinks easily allow 20-30 Amps (see construction manual) • Optional relays can be added to further reduce voltage loss / increase power • 10A capacity without any heat sinks at all
Switching speed	Battery and AC-based supply voltages are tested every 50 milliseconds (20Hz sampling speed) Software adjustable
Setting battery type / capacity	Choices entered by setting trimmer potentiometers at power-up; adjustable during any power-up. Display shows adjustments.
Smart Charger	Current-controlled, pulse-width modulated, voltage guided charging Includes proper support for LIFEPO4 to avoid long term damage that would occur from inappropriate currents / voltages. Provides necessary trickle charging for lead-acid types. PWM frequency does not appear to cause RF hash.
Low Voltage Cutoff	Software adjustable; default settings are 11.0 VDC for lead acid chemistries; 12.0 VDC for LIFEPO4 (designed to avoid activating battery management systems. Optimized for Bioenno brand.)
Current monitoring	Circuit monitors both battery current and radio current using simple 12" #14 AWG current shunts in negative leads.
Software	Simple Arduino C-code can be edited or maintained by amateurs. GNU GPL Version 3 license, copyleft.

Figure 1: Proto-
type #2 suitable
for currents in the
30-40A range.

Figure 2. Modular por-
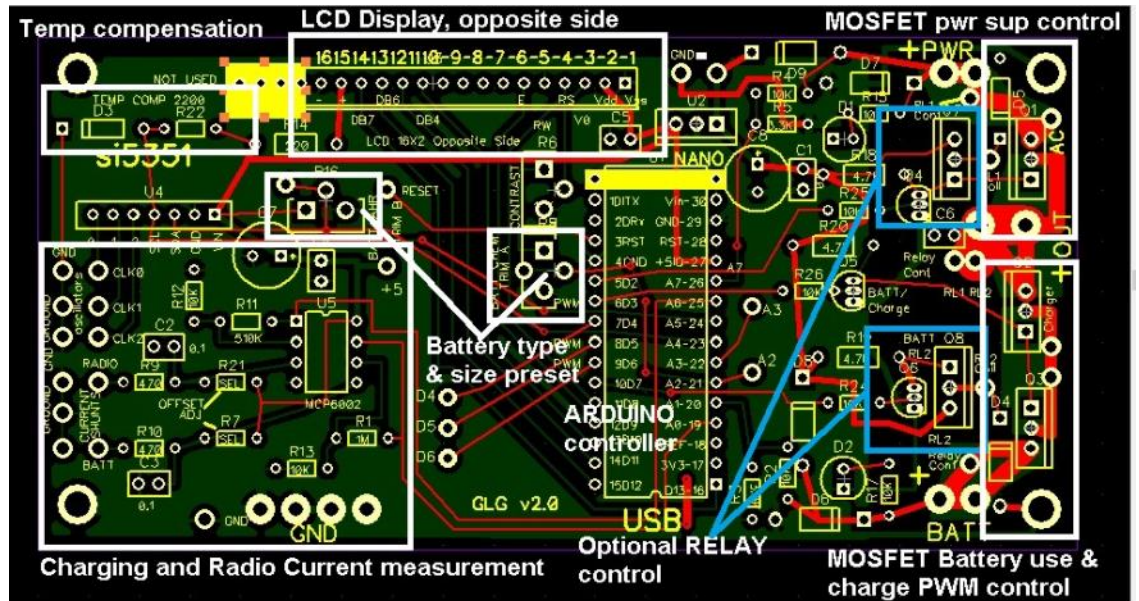tions of printed circuit
board.

Figure 3. Example of Screen Dis-
play.

Explanation of Display

ON AC Radio is powered by AC-based supply

B13.78 Battery voltage is 13.78VDC

Note: On 10 second intervals this automatically reports the AC based supply output voltage in the same position

A=0.56 Battery is being charged with 0.56 Amps

0.13AH Battery has so far absorbed 0.13AH since charging began

32 Pulse width modulation is 32/255 duty cycle

In addition to the illustrated display variables, the screen can display warning flags and accumulated discharge information.

This project has freely available Gerber files for printed circuit board fabrication by inexpensive Chinese fabricators, a complete bill of materials, and a construction/operation manual. Estimated cost for a single construction of the electronics alone is under $35.   Similarly qualified commercial systems are available in the $150 range.

Enclosure: The cost of the "box" for projects like this can easily overwhelm the project cost.   This design was made to fit inside three ganged inexpensive electrical outlet boxes, by simply removing screws and connecting boxes. (e.g. https://www.homedepot.com/p/3-in-x-2-in-Gangable-Switch-Electrical-Box-Plaster-Ears-8500/100548372 $2.44 ea.) Aluminum roof flashing (available inexpensively in long rolls) can be used to make the "front panel" and can be easily shaped with tin-snips or even toenail scissors; drilled to allow attachment to standoffs to hold the printed circuit board to the flanges of the electrical box.   One 10-foot flashing roll ($7) will handle an entire club.   (https://www.homedepot.com/p/Amerimax-Home-Products-10-in-x-10-ft-Mill-Finish-Aluminum-Roll-Valley-Flashing-68310/100054269) More expensive extruded metal or plastic enclosures can certainly be used.   The construction manual will give suggestions for adequate heatsinking for different levels of intended maximum current. To accommodate larger heatsinks, one end of the electrical boxes is easily removed by one screw.

Measurements & protections: The hardware design includes transient over-voltage suppression diodes.   To protect the power supply against over-draw, battery charging is automatically inhibited during periods of high radio current draw.   Battery and AC-based power supply voltages are accurately measured and displayed.   Battery charging current / accumulated charge is measured at 10 second intervals.   As radio usage is highly irregular, accumulated discharge current measurement is approximate due to 10-second current samples. Project code exceeds 1000 lines, and is event-based with multiple time-based interventions, and includes watchdog re-start timer protection.

URLs for Free Resources

Zipped Gerber printed circuit board files suitable for direct submission to PCB fabricator such as pcbway.com	https://qsl.net/nf4rc/2020/TopSilk.zip
Bill of Materials	https://qsl.net/nf4rc/2020/BillofMaterials.pdf
Current version of software (GNU GPL license for freely available usage) as a zip file. Arduino IDE may be freely downloaded here: https://www.arduino.cc/en/Main/Software	http://qsl.net/nf4rc/2020/BatteryBackupVer2.0.zip (Internal version at time of this writing is 2.004)
Construction manual (current version)	https://qsl.net/nf4rc/2020/ FinalPowerSwitchManual.pdf

Persons interested in using this for a club project or asset protection are welcome to contact the author for further information at docvacuumtubes@gmail.com

FCC Testing Information

4 Corners Radio Club, Davenport FL

- First Saturday
- 10:00 AM
- Polk County Firehouse, 50945 US 27
- Walk-ins welcome
- Info: WA2FRW@aol.com

Hog County Amateur Radio Association, Bushnell FL

- First Saturday, 11:00 AM
- Cross Connection Church, 1451 West County Road 476, Bushnell, FL 33513
- Info: sumterVE@gmail.com

Lake ARA, Leesburg FL

- Monthly on the 3rd Saturday, prior to monthly meeting. (Except December)
- 8:00 AM
- LARA Clubhouse (11146 Springdale Ave, Leesburg – off of CR 473)
- For more information and registration, contact: Dave Templeton N4NG, 386-804-2806 n4ng@icloud.com in advance of the meeting.

Lake Monroe ARS FCC Testing, Sanford FL (LMARS)

Cancelled until further notice due to loss of venue because of COVID 19

- For more information and registration, contact Bob Cumming, W2BZY, 407-333-0690 or w2bzy@cfl.rr.com

Milton Amateur Radio Club, Milton FL

- Second Thursday of each even numbered month
- 6:30 PM
- Walk-in
- West Florida Hospital Rehab Institute, 8383 N Davis Hwy, Close to Johnson and N. Davis
- Info: Robert Speser, nb8s@icloud.com

Orlando ARC FCC Testing (OARC)

Cancelled until further notice due to loss of venue because of COVID 19

- Info: https://oarc.org/events-ve-testing

QCWA Chapter 45, Orlando FL

- Second Thursday
- 11:00 AM
- Golden Corral, 5535 S. Kirkman Ave, Orlando
- Walk-ins welcome
- Info: WA2FRW@aol.com

Silver Springs Radio Club, Ocala FL (SSRC)

- Go to http://k4gso.us/class/ to signup for classes
- Go to http://k4gso.us/test-signup/ for testing. Testing is held on the 2nd Tuesday of odd months at 7 PM.
- Note http://k4gso.us/ncvec605/ is requested to be filled out before you show for testing. It is best to download the form and open it as a PDF so you can fill in the blanks.

Suwannee ARC, Live Oak, FL

- First Tuesday of the month prior to the meeting
- Saturdays available with advanced notice
- N4SVC, 9707 58th Street, Live Oak, FL 32060
- www.suwanneearc.org for more information

Tallahassee Amateur Radio Society (TARS)

The Tallahassee Amateur Radio Society (TARS) has begun limited License testing. Please refer to the following for the updated testing dates and requirements for individuals wishing to take exams. https://k4tlh.net/faq/license-testing/

West Volusia Amateur Radio Society

- Second Saturday of each odd numbered month
- 9:00 AM
- Elks Lodge, 614 S. Alabama Avenue, Deland, FL
- Info: https://westvars.org/testing

Remember: Bring photo ID, CSESs, copy of current license, exam fee in cash, $15 exact change. Large print exams are available.

Due to the COVID 19 restrictions on gatherings, please check with the organizations listed for changes or cancellations.

NFL Web Site

For net, hamfest and other events go to www.arrl-nfl.org. Webmaster Brian McClure, NW4R, maintains an up-to-date and detailed listing of all NFL nets and activities. If you need to make a change to an existing net or activity, or add a new one, you can contact Brian on the website.

NFL Officials

Section Manager – *Kevin Bess, KK4BFN*

Assistant Section Managers

    Joseph D. Bushel W2DWR

    John C Reynolds W4IJJ

    Dave Davis WA4WES

    Jeff Capehart W4UFL

    Neil Light KK4VHX

    Ray Crepeau K1HG

    Steve Szabo WB4OMM

Section Emergency Coordinator – *Karl Martin K4HBN*

Section Public Information Coordinator— *Scott Roberts KK4ECR*

Assistant SE Coordinator – *Dave Davis WA4WES*

Section Technical Coordinator – *Frank Haas KB4T*

Affiliated Club Coordinator – *Appointment Pending*

Section Traffic Manager – *Helen Straughn WC4FSU*

Official Observer Coordinator – *Robert Leasko WB8PAF*

Want a QST NFL Reminder?

Marty Brown, N4GL, Editor

Click on the email below and I'll put you on the reminder list that lets you know when the monthly input is due, and when the newsletter is posted on the website arrr-nfl.org.

Email: n4gl.marty@gmail.com

Newsletter of the Northern Florida Section of the ARRL

1. Spread the word about our website www.arrl-nfl.org and *QST NFL* on your club web-site, in a newsletter or at a meeting.
2. Send a write-up and picture of your next activity.
3. Make sure you, or the appropriate member of your club is on the email reminder list.
4. Contact: Marty Brown N4GL, n4gl.marty@gmail.com

QST NFL is a monthly publication of the ARRL Northern Florida Section. QST NFL is intended for wide distribution within the NFL Section, including club Leaders and all licensed Amateurs in Florida. A current issue of this publication can be found at the ARRL Southeastern Division web site, Northern Florida Section. www.ARRL-NFL.org Opinions expressed by writers are their own, and may not express the positions of the ARRL. Submissions may be made to the editor, Marty Brown, N4GL.MARTY@gmail.com.