



Amateur Radio Go Boxes

JAMES LEA, WX4TV

Introduction

- ▶ WX4TV
- ▶ Originally licensed at 13 years old in 1981 as KA4UBN.
- ▶ Husband to Michelle, N8ZQZ.
- ▶ Dad to:
 - ▶ Zechariah, WX4TVJ
 - ▶ Faith Hannah, KD3Z
 - ▶ Hope, ND2L
 - ▶ Grace, KE3G
- ▶ Former Emergency Coordinator – Volusia County, FL ARES®
- ▶ Active with my family in amateur radio contesting.
- ▶ NPOTA, POTA, Lighthouses, Islands, DXpeditioning, etc.
- ▶ My career has taken me all over the world to places that were either about to be blown down or blown up.
 - ▶ Haiti Earthquake
 - ▶ Tsunamis and Volcanoes
 - ▶ Over 200 Hurricanes Since 1993
 - ▶ War Zones
- ▶ Lived in Africa and Several Caribbean Islands
- ▶ Strike Team Lead / Field Operations/Communications Manager - AERObridge

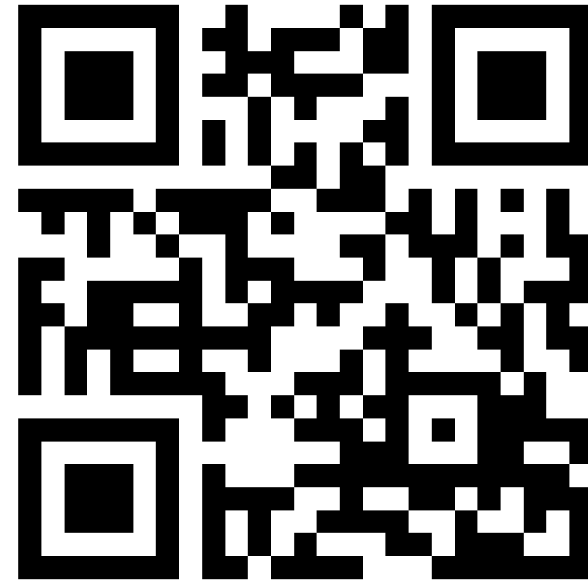
Introduction



Introduction



You May Recognize Us...



Uses for Go Boxes

- ▶ Operating in the Field
 - ▶ Park Activations
 - ▶ National Parks on the Air
 - ▶ POTA
 - ▶ Field Day
 - ▶ Vacations
 - ▶ Islands on the Air
 - ▶ DXpeditions
 - ▶ Camping



Uses for Go Boxes

- ▶ Home Ham Shack
 - ▶ Organize Your Gear
 - ▶ Keep Things Tidy
 - ▶ Keeps your spouse happy!
 - ▶ Put the cover on the radios when not in use.
 - ▶ Easy to take with you to other places, if you need or want to.



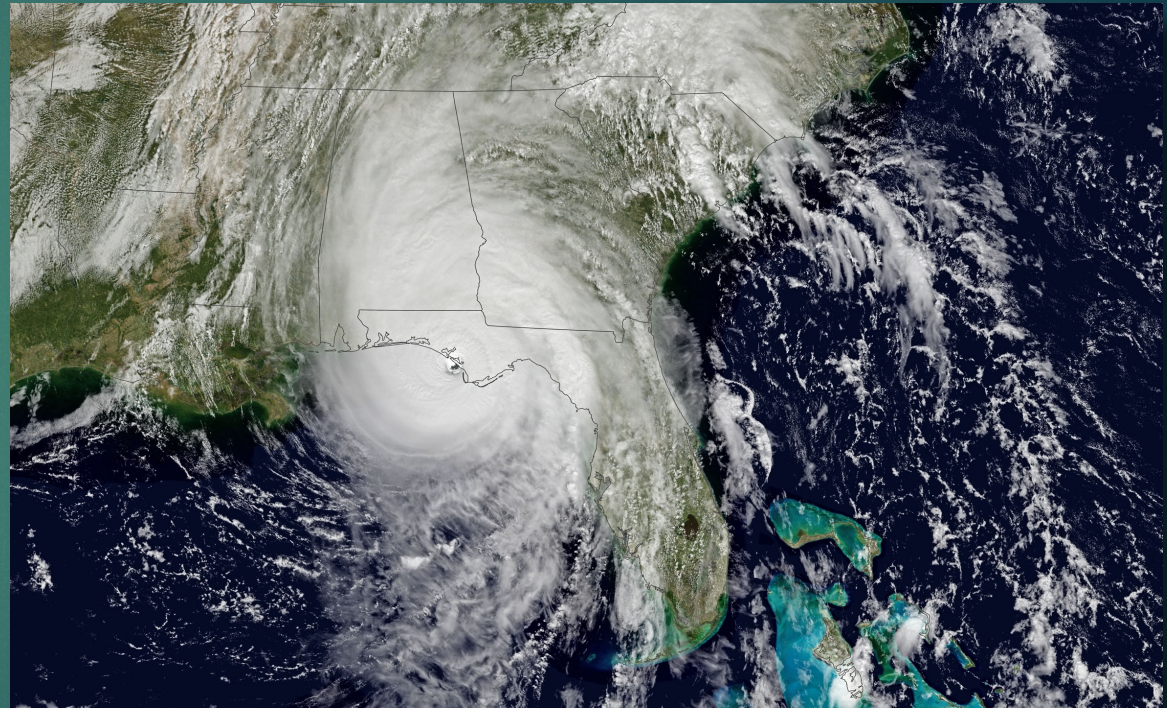
Uses for Go Boxes

- ▶ Use in Your Car or RV
 - ▶ Easy to move from car to car, home to car, or home to RV even.
 - ▶ Benefits
 - ▶ Can save money because you don't need multiple radios.
 - ▶ Home
 - ▶ Car
 - ▶ Portable Operations
 - ▶ Can help keep your radio(s) and equipment from being stolen.
 - ▶ Take it with you.
 - ▶ Lock it in the trunk.



Uses for Go Boxes

- ▶ Disasters and Emergencies
 - ▶ In Florida we have lots of opportunities to use Go Boxes in Disasters!
 - ▶ Hurricanes
 - ▶ Tornadoes
 - ▶ Wildfires
 - ▶ Widespread Power Outages
 - ▶ Shelter Communications
 - ▶ Command Posts
 - ▶ Emergency Operations Centers



Uses for Go Boxes

- ▶ Disasters and Emergencies
 - ▶ In Florida we have lots of opportunities to use Go Boxes in Disasters!
 - ▶ Hurricanes
 - ▶ Tornadoes
 - ▶ Wildfires
 - ▶ Widespread Power Outages
 - ▶ Shelter Communications
 - ▶ Command Posts
 - ▶ Emergency Operations Centers



Uses for Go Boxes

- ▶ Disasters and Emergencies
 - ▶ In Florida we have lots of opportunities to use Go Boxes in Disasters!
 - ▶ Hurricanes
 - ▶ Tornadoes
 - ▶ Wildfires
 - ▶ Widespread Power Outages
 - ▶ Shelter Communications
 - ▶ Command Posts
 - ▶ Emergency Operations Centers



Uses for Go Boxes

- ▶ Disasters and Emergencies
 - ▶ In Florida we have lots of opportunities to use Go Boxes in Disasters!
 - ▶ Hurricanes
 - ▶ Tornadoes
 - ▶ Wildfires
 - ▶ Widespread Power Outages
 - ▶ Shelter Communications
 - ▶ Command Posts
 - ▶ Emergency Operations Centers



Uses for Go Boxes

- ▶ Public Service Events
 - ▶ JOTA/Merit Badge Weekends
 - ▶ Bike-a-Thons
 - ▶ Tour de Cure
 - ▶ MS 150
 - ▶ Champions Ride for Charities
 - ▶ Walk-a-Thons
 - ▶ MS Walk
 - ▶ Parades
 - ▶ Fireworks Displays



Uses for Go Boxes

- ▶ Prepping
 - ▶ Grid Down
 - ▶ Communicate with Family/Friends
 - ▶ You need a way to power your gear.
 - ▶ More about that later...
 - ▶ Uncertain Times
 - ▶ Political Unrest
 - ▶ War
 - ▶ SHTF



How We Got Started with Amateur Radio in the Field with our Children.

- ▶ 2015 Jamboree on the Air (JOTA)
 - ▶ Wrapped Yaesu FT-897D radio in a towel.
 - ▶ Wrapped Astron power supply in a towel.
 - ▶ Wires were messy.
 - ▶ Easy to forget stuff.
 - ▶ Hard to carry.
- ▶ 2016 National Parks on the Air
- ▶ We **needed** to build a go box!



Building Our First Go Box

- ▶ February 2016
 - ▶ Gator 6 RU Shallow ABS Case
 - ▶ Yaesu FT-991 HF Transceiver
 - ▶ LDG YT-1200 Autotuner
 - ▶ Yaesu FT-8800 VHF/UHF Transceiver
 - ▶ Astron 30 Amp Power Supply
 - ▶ Livewire Power Conditioner



Building Our First Go Box



Using Our First Go Box

- ▶ NPOTA
- ▶ Ponce Inlet Light Station
 - ▶ We got several kids on the air!
- ▶ Several Field Days
- ▶ Four Winter Field Days
- ▶ Several Parks on the Air
- ▶ Florida QSO Party
- ▶ Boy Scout Merit Badge Weekend
- ▶ “CQ Santa”
 - ▶ Lowe’s Parking Lot
 - ▶ “Santa” was at the “North Pole.”



Ponce Inlet Light Station



Field Days



Boy Scout Merit Badge Weekend



Award-Winning Go Box!!!

- ▶ 2017 Stone Mountain Hamfest
 - ▶ Go Box Contest
 - ▶ The judges were Mike Corey and Greg Sarratt.
 - ▶ The kids' Go Box won overall First Place!

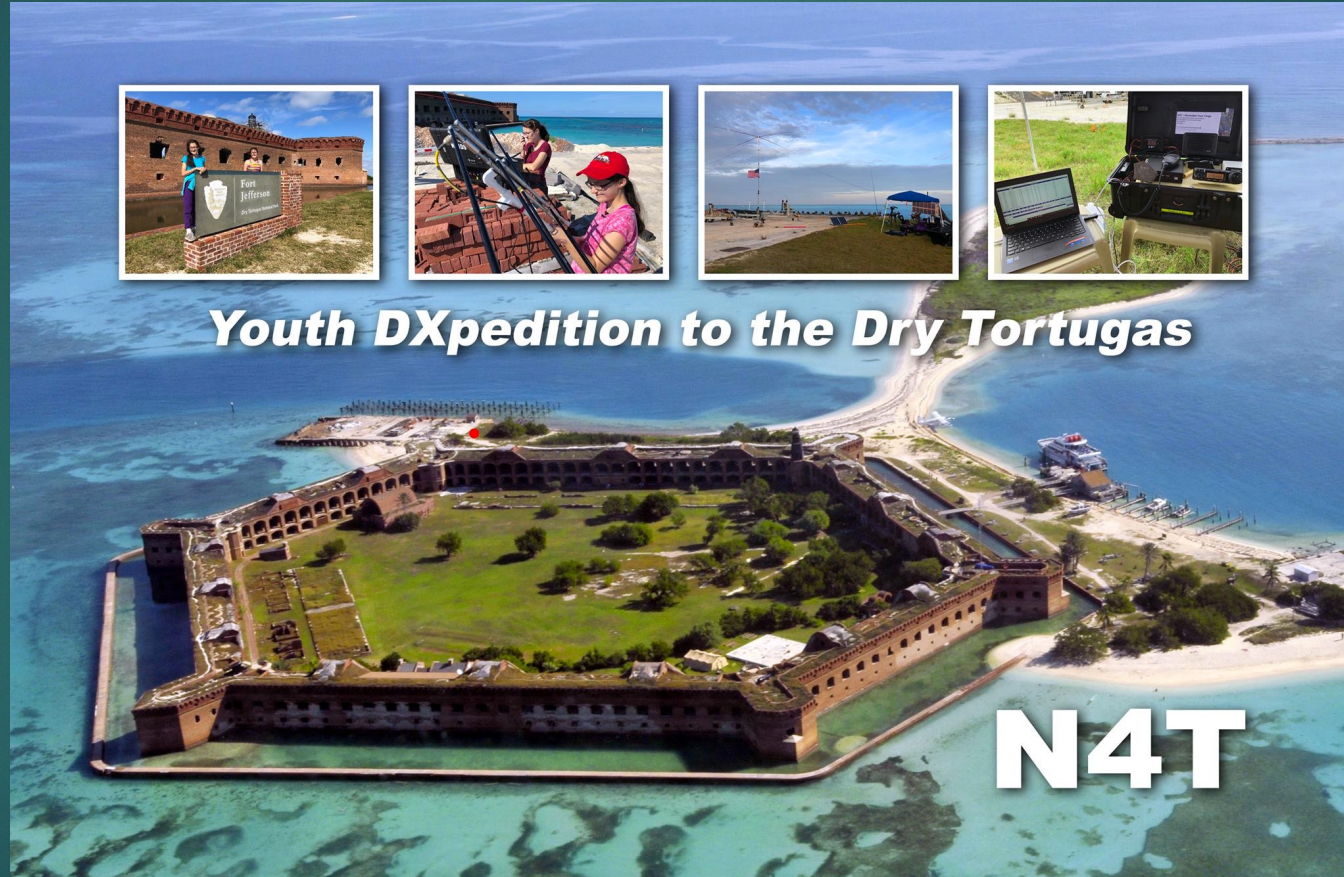


We Started Building More!

- ▶ We wanted to make more go boxes and implement what we had learned along the way.
 - ▶ More about that later...
- ▶ We had started using solar power by this time.
 - ▶ We wanted to include solar power capabilities in our next go boxes.
 - ▶ More about that later...
- ▶ VHF/UHF Satellite Go Box
- ▶ HF/VHF/UHF DXpedition Go Box



N4T Dry Tortugas DXpedition



Things We Learned

- ▶ Our first Go Box was TOO HEAVY!
 - ▶ We included too many items to allow it to be easily portable.
 - ▶ Power Supply
 - ▶ Power Conditioner
 - ▶ Large Rig Runner
 - ▶ It took two of us to move it from place to place.
 - ▶ We figured out that we did not need to include the power supply and power conditioner.
 - ▶ More about that later...
 - ▶ Hint: Bioenno Power LiFePO_4



Things We Learned

- ▶ All-in-One Go Box vs. Single Radio Go Box
 - ▶ All-in-One has HF Radio and VHF/UHF Radio
 - ▶ Good if you always want to take all the radios with you or if you want to keep your radios organized in the shack.
 - ▶ Can be heavy.
 - ▶ If using in a disaster and there are multiple operators, you cannot separate from each other.



Things We Learned

- ▶ All-in-One Go Box vs. Single Radio Go Box
 - ▶ Single Radio Go Box has either HF or VHF/UHF Radio.
 - ▶ In a disaster or Field Day, multiple operators can be separated.
 - ▶ Easier to carry because they are lighter.
 - ▶ Only take what you need.



Things We Learned

- ▶ Use QUALITY Components!
 - ▶ We lived on an island in the Caribbean where you could not go to the hardware store.
 - ▶ If it breaks, you're not going to get a replacement part easily.
 - ▶ Same thing goes for Emergencies/Disasters, DXpeditions, and Vacations.
 - ▶ If your life, your family's lives, or the lives of others depend upon your ability to communicate, cheap is not going to be reliable.



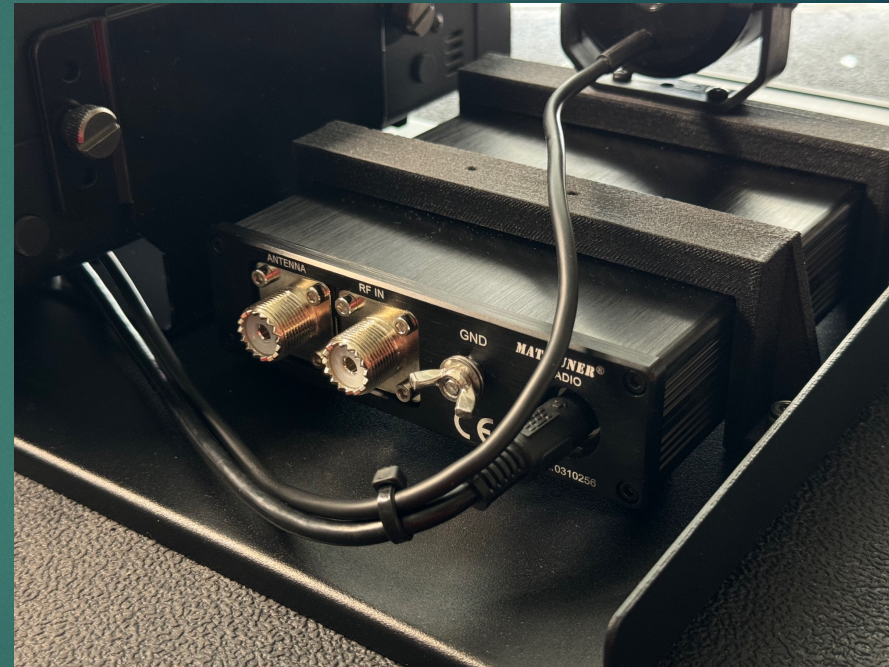
Things We Learned

- ▶ Use QUALITY Components!
 - ▶ Gator Cases and Nanuk Boxes
 - ▶ Messi and Paloni Coax
 - ▶ High-Quality Solar Power Connectors
 - ▶ Marine Grade Heat Shrink Crimp Connectors
 - ▶ Stainless Steel Hardware with Nylox Nuts
 - ▶ Pure Copper AWG Wire and Wire Loom
 - ▶ Quality Radios and Components
 - ▶ Icom, Yaesu, etc.
 - ▶ Bioenno Power LiFePO₄ Batteries



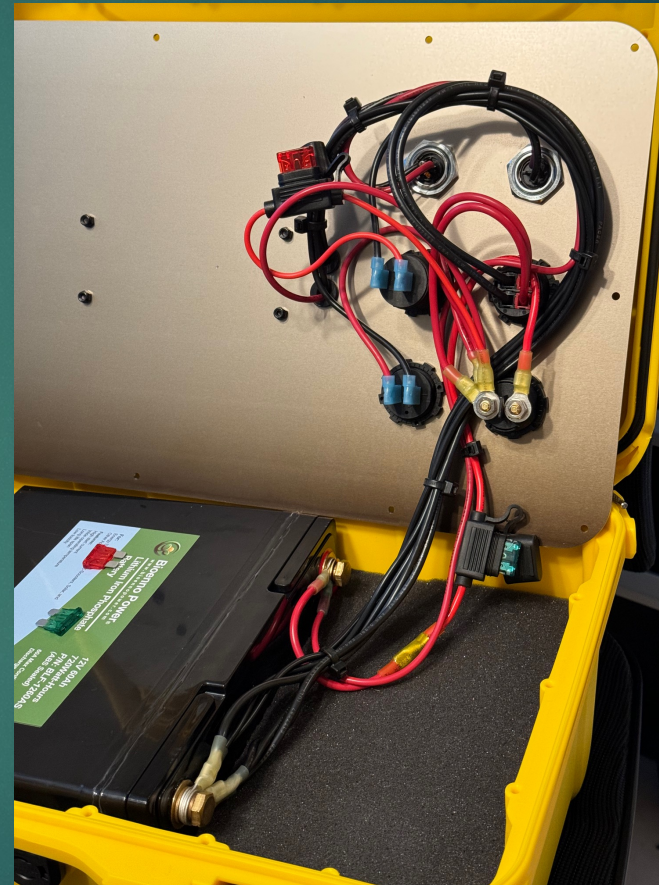
Things We Learned

- ▶ Use QUALITY Components!
 - ▶ Gator Cases and Nanuk Boxes
 - ▶ Messi and Paloni Coax
 - ▶ High-Quality Solar Power Connectors
 - ▶ Marine Grade Heat Shrink Crimp Connectors
 - ▶ Stainless Steel Hardware with Nylox Nuts
 - ▶ Pure Copper AWG Wire and Wire Loom
 - ▶ Quality Radios and Components
 - ▶ Icom, Yaesu, Kenwood, etc.
 - ▶ Bioenno Power LiFePO₄ Batteries



Things We Learned

- ▶ Use QUALITY Components!
 - ▶ Gator Cases and Nanuk Boxes
 - ▶ Messi and Paloni Coax
 - ▶ High-Quality Solar Power Connectors
 - ▶ Marine Grade Heat Shrink Crimp Connectors
 - ▶ Stainless Steel Hardware with Nylox Nuts
 - ▶ Pure Copper AWG Wire and Wire Loom
 - ▶ Quality Radios and Components
 - ▶ Icom, Yaesu, Kenwood, etc.
 - ▶ Bioenno Power LiFePO₄ Batteries



Things We Learned

- ▶ Use QUALITY Components!
 - ▶ Gator Cases and Nanuk Boxes
 - ▶ Messi and Paloni Coax
 - ▶ High-Quality Solar Power Connectors
 - ▶ Marine Grade Heat Shrink Crimp Connectors
 - ▶ Stainless Steel Hardware with Nylox Nuts
 - ▶ Pure Copper AWG Wire and Wire Loom
 - ▶ Quality Radios and Components
 - ▶ Icom, Yaesu, Kenwood, etc.
 - ▶ Bioenno Power LiFePO₄ Batteries



Things We Learned

- ▶ Use the Right Tools!
 - ▶ We found out the hard way.
 - ▶ Drilled a lot of holes the wrong way.
 - ▶ Soldered Anderson Powerpoles.
 - ▶ Crimped using pliers.
 - ▶ Stripped wires incorrectly with needle nose pliers.
 - ▶ Melted coax dielectric with improper soldering iron.
 - ▶ Used pliers and rubber bands to hold things we were soldering.
 - ▶ Used a lighter for heat shrink.



Things We Learned

- ▶ Use the Right Tools!
 - ▶ We now use:
 - ▶ Drill Press
 - ▶ DeWalt Variable Temperature Heat Gun
 - ▶ Crimpers for Heat Shrink Crimp Connectors
 - ▶ Anderson Powerpole Crimpers
 - ▶ SB-50 Crimpers
 - ▶ Klein Wire Strippers
 - ▶ High-Quality, Variable Temperature Soldering Iron
 - ▶ Flexible Arms to Hold Things We are Soldering



Things We Learned

- ▶ Use the Right Tools!
 - ▶ We now use:
 - ▶ Drill Press
 - ▶ DeWalt Variable Temperature Heat Gun
 - ▶ Crimpers for Heat Shrink Crimp Connectors
 - ▶ Anderson Powerpole Crimpers
 - ▶ SB-50 Crimpers
 - ▶ Klein Wire Strippers
 - ▶ High-Quality, Variable Temperature Soldering Iron
 - ▶ Flexible Arms to Hold Things We are Soldering



Things We Learned

- ▶ Remember that our first go box was too heavy?
 - ▶ Six Rack Unit Deep Gator Box
 - ▶ Power Supply and Power Conditioner
 - ▶ Large Rig Runner
- ▶ We now power our go boxes with LiFePO₄ battery boxes and/or solar generators.



Battery Boxes and Solar Generators

- ▶ We first used a large polycrystalline solar panel and PbSO_4 deep cycle batteries.
 - ▶ Very heavy and not portable.
 - ▶ Can only use 50% of battery capacity without damaging battery.
 - ▶ PbSO_4 can only be charged between 400-500 times.
 - ▶ Voltage drops too quickly.
 - ▶ Yaesu radios did not like being powered by PbSO_4 . Voltage dropped too low and the VCO would mess up upon transmitting.
 - ▶ Solar panel got broken while being transported—it was too fragile.



Battery Boxes and Solar Generators



Battery Boxes and Solar Generators



Battery Boxes and Solar Generators



Battery Boxes and Solar Generators



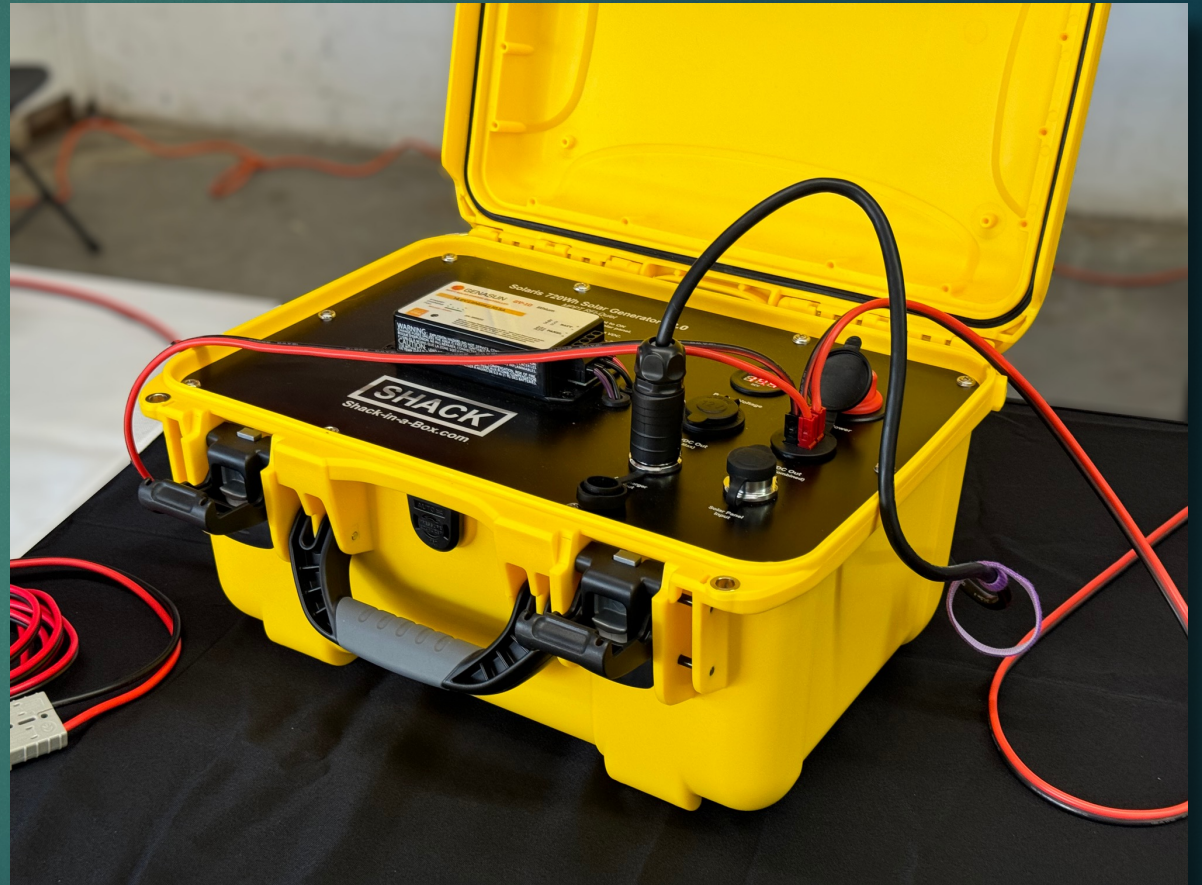
Battery Boxes and Solar Generators

- ▶ We now use Bioenno Power LiFePO_4 batteries.
 - ▶ Lightweight
 - ▶ They won't catch on fire.
 - ▶ Voltage stays constant until right at the end of battery capacity.
 - ▶ Can use 90% of the battery's rated capacity.
 - ▶ Also has protection circuitry.
 - ▶ Can be recharged up to 5,000 times.
 - ▶ Over the lifetime of a battery system, LiFePO_4 costs 85% LESS per watt hour than PbSO_4 .



Solar Generators

- ▶ We build our solar generators into Nanuk cases with Bioenno Power LiFePO₄ batteries and solar charge controllers.
- ▶ Genasun GV-10-Li
 - ▶ MPPT
 - ▶ Absolutely RFI-Quiet



Solar Panels

- ▶ We really like the Bioenno Power Solar Panels.
 - ▶ Rigid Folding Panels
 - ▶ Very Sturdy
 - ▶ Can stay out in the rain and are good in the wind.
 - ▶ Twice as heavy as most portable folding panels.
 - ▶ Transportable, not portable.
 - ▶ Portable Folding Panels
 - ▶ Lightweight
 - ▶ Very Portable
 - ▶ Not too good in wind or rain.



Solar Panels

- ▶ We really like the Bioenno Power Solar Panels.
 - ▶ Rigid Folding Panels
 - ▶ Very Sturdy
 - ▶ Can stay out in the rain and are good in the wind.
 - ▶ Twice as heavy as most portable folding panels.
 - ▶ Transportable, not portable.
 - ▶ Portable Folding Panels
 - ▶ Lightweight
 - ▶ Very Portable
 - ▶ Not too good in wind or rain.



Solar Panels

- ▶ We really like the Bioenno Power Solar Panels.
 - ▶ Rigid Folding Panels
 - ▶ Very Sturdy
 - ▶ Can stay out in the rain and are good in the wind.
 - ▶ Twice as heavy as most portable folding panels.
 - ▶ Transportable, not portable.
 - ▶ Portable Folding Panels
 - ▶ Lightweight
 - ▶ Very Portable
 - ▶ Not too good in wind or rain.



Selling Our Go Boxes

- ▶ April 2019
 - ▶ Someone wanted to buy our first Go Box.
 - ▶ We really did not want to sell it.
 - ▶ We eventually realized that we could build more go boxes, so...
 - ▶ We sold it!
- ▶ We started our business!
 - ▶ Shack-in-a-Box
 - ▶ www.Shack-in-a-Box.com

SHACK

Shack-in-a-Box.com

Easily carry your radio and batteries into the field for:

- Parks on the Air
- Lighthouse Activations
- DXpedition Vacations
- Field Day
- ARES® Events
- EmComm
- The Possibilities are Endless!



VISIT OUR WEBSITE



SCAN ME AND SUBSCRIBE!

Amateur Radio and EmComm Communications Go Boxes handcrafted by the hosts of the world-famous HamRadio.World YouTube channel.



Shack-in-a-Box

- ▶ HF/VHF/UHF Go Boxes
- ▶ VHF/UHF EmComm Go Boxes with LiFePO₄ Battery UPS
- ▶ HF EmComm Go Boxes
- ▶ DXpedition-in-a-Box
- ▶ Solaris Solar Generators



Taking a Break...



Questions?

