



Sticky Notes

GECO Newsletter
Vol.7, No. 4, Sep 2022

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Ready to Serve and Sustain Our Community



Scouting Emergency Helicopter LZ/DZs

Our interests in helicopters and amateur radio go back to the formative years of GECO as part of the Rural Training Center-Thailand (RTC-TH) EmComm section. A review of numerous disasters in remote and rural areas shows helicopters are often the first outside help to arrive. One year in northern Thailand, three helicopters and their crews encountered trouble in the mountainous region where we were living. The first crashed and survivors radioed for help. A rescue helicopter was dispatched but crashed (probably due to poor weather). Another rescue helicopter was also lost.

There were only two official weather stations in the province, and none were in the area of these incidents. (Even if a weather station was nearby, mountain weather conditions can change rapidly.) This prompted the development of the RTC-TH to adapt earlier weather observation lessons from an elementary school science program (also adapted for sustainable agriculture) to become the Mobile Emergency Weather Station (MEWS). Not to be a competitor with the NWS SKYWARN program, MEWS is tailored for weather observations from disaster areas with no weather station and to improve relief helicopter flight safety. We presented this at the MyGAREC 2012 conference in Kuala Lumpur as a “value-added” enhancement for amateur radio EmComm operators.



When helicopters fly to disasters in remote regions, they are confronted with some key problems:

- 1) Flying into unfamiliar territory and with little to no current weather information.
- 2) They have a limited fuel supply and often cannot expect to be refueled in the disaster area.
- 3) Upon arrival, it is unlikely they will have radio contact with the survivors on the ground.

We thought training amateur radio EmComm operators to scout for emergency landing zones (LZs) and drop zones (DZs) before an emergency had several advantages:

- It was another “value-added” enhancement for amateur radio EmComm operators.
- Locals know the area better than helicopter flight crews who were most likely to be outsiders.
- Having pre-screened LZ/DZ options could save fuel (and time) and provide emergency landing sites. Once safely on the ground, subsequent helicopters could safely bring in fuel or repair teams.
- The training would include [ground-to-air signal lessons](#).

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Work began on creating lessons with the option to easily adapt them for classroom use as practical lessons in math, science, language, and arts. This was easy to do by using the [geographic systems model](#) to define the relationship of the training topics to subject disciplines, applying geography to LZ/DZ siting, and using [community-based education](#) as the delivery mode. This approach not only added value to amateur radio operators in EmComm but also empowered them to help improve education in their communities. The GECO no-cost/low-cost, no-tech/low-tech approach uses Do-It-Yourself (DIY) methods to make most of the tools/equipment for the lessons. This creates interactive hands-on learner engagement and increases the chances of project replication in impoverished and remote areas. These concepts were adequately demonstrated by the implementation of the RTC-TH programs from 2008-2014 (FFI click [here](#) and [here](#)) and culminated in the current [GECO](#) organization.

Major life disruptions ended with a fourth rough draft in 2012 of the helicopter LZ/DZ lessons. During several moves, computers, hard drives, and computer files were lost along the way. Two months ago, we were pleasantly surprised to find a second draft of the 2012 effort. We are now actively collaborating with Applied Geography for Sustainable Living ([AppGeog](#)) to revise the LZ/DZ scouting lessons.

For this effort, AppGeog is in charge of the educational aspects (e.g., lesson design, presentation, delivery modes, etc.) as well as the geographic aspects of the field survey methods. GECO provides the technical and emergency operational content.

Making the lessons suitable for school use also gives radio amateurs a chance to introduce amateur radio training and recruit members for their local group. (FFI the [GECO NextGen](#) effort.)

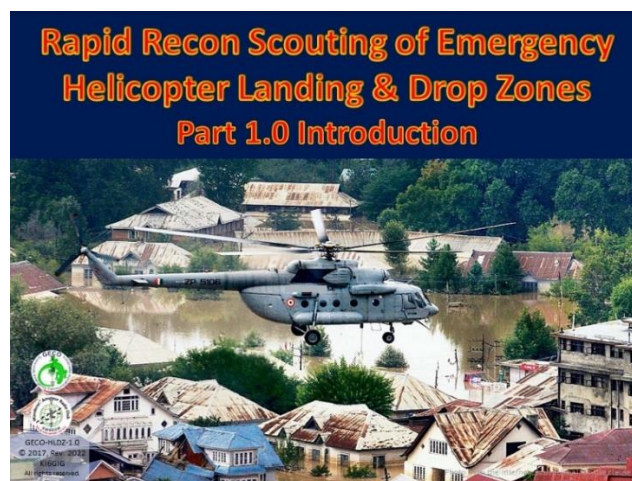
GECO has a tentative list of module topics (see sidebar below). Most folks can readily see how these topics connect directly with basic math and science exercises in elementary school to college

Tentatively Planned HLZ/DZ Modules

1. Size
2. Slope
3. Surface
4. Sun & Shadow
5. Wind & Weather
6. Obstacles
7. Recognition marking
8. Air Approach and Departure
9. Ground Approach and Departure
10. Special Situations
11. Ground-to-Air Communications
12. Report & Share
13. Review & Updates

level. Many of AppGeog's lessons have been appropriately adapted for use at the elementary to college/adult levels (e.g., weather observing, field surveying and mapping, etc.).

Due to the extensive revision being planned, all modules must undergo one rough draft to allow for a continuity check for the entire series before release. No target date has been decided but considering a decade has passed since the original start, this lesson series is long overdue. The work began last month with the introduction to the series and the first three modules have completed the first draft stage. 🦎



GECO Battery Connectors

GECO has been the beneficiary of free lead-acid, [12 V 16 Ah deep cycle batteries](#) from the Glendora Emergency Response Communications group in Glendora, CA. GERC. In addition to making a battery bank for emergency power for the GECO base station, we made two portable field battery banks. They are more “luggable” banks of three batteries weighing 18.2 kg/40.2 lbs. The photo on the right shows the field battery bank set up for maintenance charging. The left yellow box is an [Anderson SB50 connector](#) to attach the field battery bank to the GECO station battery charging system. This makes for fast connect/disconnects when deploying or returning the field battery bank. The right yellow box shows the [Anderson P30 connector](#). This is the GECO standard connector to all battery chargers and transceivers in our equipment inventory for power interoperability. This conforms to the [ARES/RACES standard](#) DC power connector practice. While GECO is not actively engaged with either group, if an emergency engagement arose, GECO power supplies would be compatible to support the EmComm effort.



GECO then considered its current battery charging modes and chargers. All of our battery chargers had to be fitted with Anderson P30 connectors for backup charging of the field battery boxes when they could not be connected to the GECO base station charging system via the SB50 connector.

GECO planned for all of its transceivers to use the field battery banks via the P30 connector. All mobile transceiver power cords were fitted with P30 connectors. The Bao Feng battery eliminators required a 12 V automotive socket (see photo on the right) to connect to the battery bank.



Bao Feng battery eliminator and 12V accessory socket with P30 connectors

Studies of many past EmComm disaster response failures involved unexpected events arising in the course of EmComm operations. These unexpected events are many and varied. Most relevant to the topic of this article is power for transceivers. This is the approach GECO decided to take: being able to connect to scavenged 12V batteries (see Box A below) from cars and office equipment (e.g., emergency lighting in stairs/hallways and computer Uninterruptible Power Supply units (UPS) (see box B below). We made a variety of battery harnesses (see discussion on next page).

A. GECO Automotive Battery Harnesses		B. GECO Office Equipment Battery Harnesses		
				

Some folks may have noticed the first battery harness photo does not have an inline fuse. The sample harnesses shown were made in response to an immediate field need using the materials at hand. The exception is the left-hand photo of the Office Equipment Harnesses which was made in the office and not in the field. Ideally, as time permits, all battery harnesses would be standard with an inline fuse close to the positive battery terminal. The opposite end of the harness would have both a P30 connector and a 12V accessory socket.

For additional information about GECO batteries, we provide these helpful links.

- [EmComm Readiness: HT Battery Charging](#)
- [Planning Your Battery Needs](#)
- [GECO Battery Box Carrier](#)
- [GECO Battery Box Quick Connect-Disconnect System](#)
- [GECO Battery Storage Tray System](#)
- [GECO Field Battery Box Upgrade](#)
- [GECO Field Battery Box Upgrade 2](#)
- [GECO Power Interconnectivity](#)
- [GECO Standard Battery Harnesses Connectors](#)
- [GECO Station Emergency Power-Battery Back-up](#)

GECO “Sticky Notes” battery-related articles.

- [2022 Vol. 7, No. 2](#) New Station Battery Bank, pp. 2-3.
- [2019 Vol. 4, No. 1](#) The GERC Battery Story, pp. 1-4, 6.
- [2019 Vol 4., No. 3](#) Disposing of Used Batteries, pp. 4-5

Wanderers ARC “Footprints” battery-related articles.

- [2022 Vol 6, No 4](#) Batteries, You’re Powerless Without Them, p.5.
- [2022 Vol 6, No 3](#) Balanced Charging for Better Battery Life, p. 1; Some Lithium Battery Notes, p. 4.
- [2021 Vol, 5, No, 1](#) New HT Battery Charging Station, p. 3.
- [2020 Vol 4, No. 2](#) Station Battery Banks & Backup, pp. 2-5. 🌱

The GERC Batt-man KB7ULN

We’ve mentioned mild-mannered, licensed amateur radio operator and long-standing GERC member Harry, KB7ULN. We don’t know how many other GERC members would recognize him on sight, but we’re fairly certain few have seen him behind the scenes as the official GERC Batt-man. We know very little about him. The few times we’ve met him, he was polite, friendly, and unassuming (the classic stereo-typic guise for the true below-the-radar persona of a superhero).

If you think the superhero title is a bit overboard, consider what happens with the highest power brand-name transceiver without power. It can be reduced to the role of a very expensive paperweight. Harry has been able to furnish GERC members with free 12 V batteries. Yes, they are used but still very serviceable.

GECO began getting some of these batteries about 8 years ago. Of the 30 or so batteries received, only four have expired after 7 years of service in GECO. Over the years, Harry has provided at least three different kinds of 12 V batteries: [12 Ah](#), [16 Ah](#), and [28 Ah](#). These can cost \$20 to \$199 each new. Because of Harry, GECO saved over 5,430 dollars! Considering we are an all-volunteer



KB7ULN, alias
GERC Batt-man

self-funded group, that makes Harry a superhero to us.

We received an anonymous photo of a masked man suspected as being the GERC Batt-man disguised as a common service technician in an undisclosed technical laboratory somewhere in southern California. There were no details or added information attached to the photo. If the person in the photo is the GERC Batt-man disguised as a qualified technician, his proximity to the high-tech equipment is very suggestive that the equipment may have the prized 12V heavy-duty sealed lead acid batteries that are much appreciated by GERC amateur radio operators. Continuing with that assumption, it is reasonable to think the masked man could be on the verge of conducting a battery-ectomy on the high-tech equipment in the empty laboratory. It all seems like the



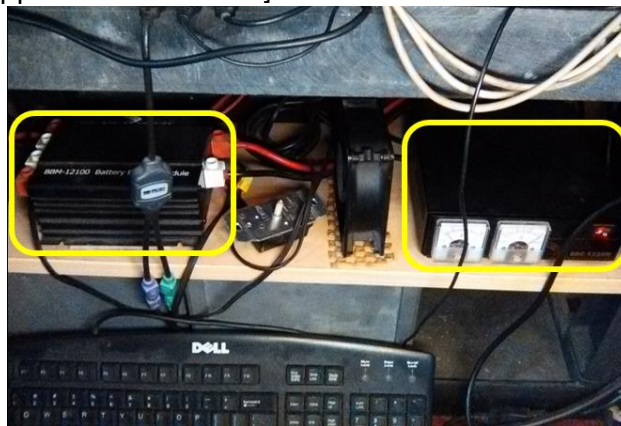
perfect setup for a non-violent snatch and grab incident whereby the perpetrator can avoid assault and battery charges. Alas, a review of police reports in the area turned up no cases of dead or missing batteries. We will keep you updated. 🍀

N6WZK Uses “Free” GERC Batteries

Loss of power is a critical concern for amateur radio operators. Joe N6WZK used nine 12V [deep cycle 16Ah batteries](#) from GERC to create a battery bank for his repeaters. The battery bank is maintained using a [Samlex SEC-1235M 30A](#) switching power supply connected to a [Samlex BBM-12100](#) battery backup module. When commercial power is lost, the BBM-12100 automatically switches the repeaters to the 12 VDC battery bank. How long the 144 Ah battery bank will last is based on the duty cycles of the repeaters. Whatever the duration, it will be more than if there were no power at all. Thanks to Harry KB7ULN for getting the batteries to GERC, and to Jim KG6TQT for distributing them. [Note: Joe set up the first GERC EchoLink gateway for Mark N7YLA (GERC founder and Net Control). When Mark moved out of the area, Joe set up a replacement GERC EchoLink gateway with Juan KM6DBM-L and continues to support the GERC Net.] 🍀



The nine 16Ah batteries in Joe’s battery bank.



The Samlex 30 A switching power supply (right) and the Samlex BBM-12100 Battery Backup Unit (left).