Grassroots Emergency Communications Operations

Sticky Notes

GECO Newsletter
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Ready to Serve and Sustain Our Community

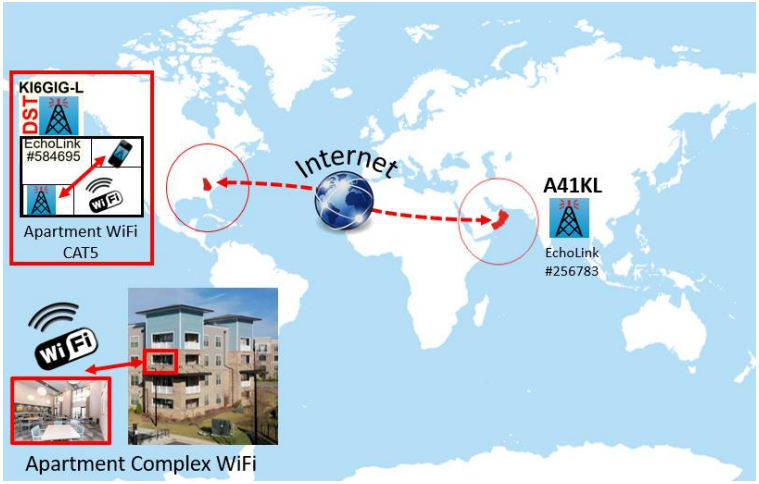
GERC Net via Linked EchoLink Nodes

The GECO EchoLink Link station KI6GIG-L (node #584695) joined the GERC Net on 2023 Feb 02 by connecting to N7YLA-L (node #358124) that was connected to the GERC EchoLink gateway KM6DBN-L node #869843.

This was an excellent test of the newly resurrected KI6GIG-L node. The diagram on the right depicts the lines of communication. Before the Net, KI6GIG-L contacted and got permission to piggyback on his node to get access to the GERC Net.

Amazing EchoLink WiFi-VOIP Connectivity

Restarting the KI6GIG-L computer is a partial success. We have Internet connectivity, but a notice pops up regarding the port forwarding settings saying it is incomplete, so some stations may have issues connecting to us. We are working with the Internet Service Provider (ISP) to resolve this issue.



Meanwhile, Sam A41KL helped us to explore the WiFi connectivity for the Link node between the station and the areas in the apartment complex. The WiFi begins with the secure router in the apartment. Outside the apartment, the complex has two WiFi connection points, a secured one and an open "Guest" WiFi connection.

The Current Set Up

I use KI6GIG single-user EchoLink (node #384040) on my smartphone and tablet. The disadvantage

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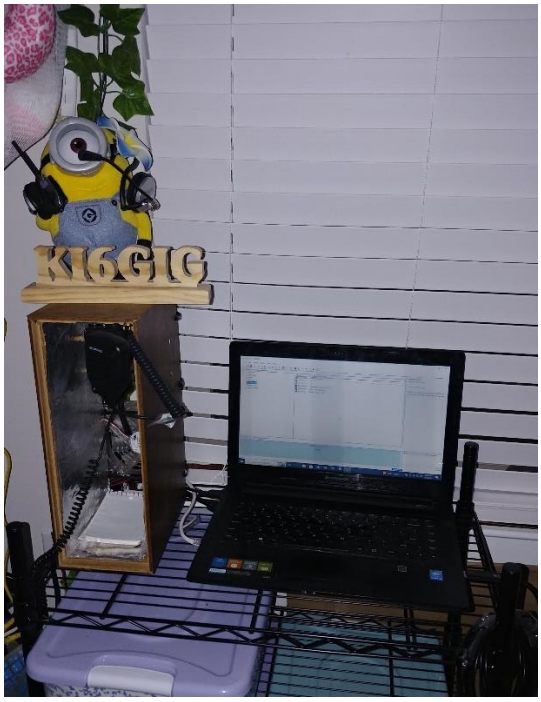
of using these for EchoLink is other amateurs with EchoLink cannot connect to my devices. I can use my devices to connect to other EchoLink stations IF they are computer-based. But if they are using phones or tablets, I cannot connect to them. Now with the KI6GIG-L (node 584695) up and running, other EchoLink stations can connect here and give me a shout. [**Note**: The RF portion of the Link node has not yet been installed.]



The KI6GIG-L dedicated EchoLink computer. The cabinet on the left is a fan-cooled cabinet for an HT radio with a mini-whip antenna mounted on a bracket near the window.

Surprise #1: Apartment Phone-Computer Connection. The EchoLink computer is in a separate room on the other side of the apartment from my office. The plan was to use an HT to monitor the EchoLink-L RF-enabled station. But until the RF installation is done, I can use the KI6GIG smartphone to connect to the KI6GIG-L computer. I can monitor the computer using the smartphone via WiFi. I've never been able to do this in other apartments, but it works!

Surprise #2: Community Room Phone-Computer Connection. I took the smartphone to the Community Room and connected it to the apartment complex "Guest" WiFi, which is available in all common areas of the complex. I was able to connect to the EchoLink computer in my third-floor apartment across the driveway and parking area from the ground-floor Community Room. Sam A41KL reported a full quieting signal. We estimate the LOS distance (yellow arrow on the right) from the Community Room exit door to the 3rd-floor apartment as 1,788 feet). However, walking back to the apartment, the WiFi dropped and Sam and I lost contact. We regained contact once I was back at the apartment WiFi.

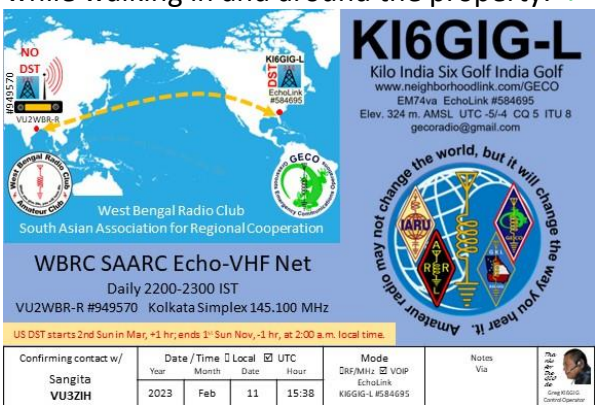
The LOS from the Community Room to my 3rd-floor apartment is about 1,788 feet (yellow arrow).

Surprise #3: The Cat's Meow. Another resident helped me to connect to the secure apartment complex WiFi rather than using the unsecured "Guest" network. Sam was available again to help with the test. So, starting from the Community Room, I narrated my walk back to the apartment with Sam monitoring. He heard the entire walk-and-talk without a break! Sam was surprised.

In his two-story house, coming down to the ground floor, his WiFi signal would drop requiring him to. reboot his phone.

Follow-on Work. The unpacking has been a slow work in progress. We've managed to find a roll-up dual-band (2m/70 cm) antenna, and a former base station Quadband transceiver (TYT-TH9600) but have yet to find the box with the EchoLink/computer interface. Once we find it, we'll be able to

assemble all the pieces and begin testing the simplex RF Link node. It will be interesting to compare the range to access the system via Wi-Fi or Simplex RF while walking in and around the property.



Two of several new KI6GIG-L QSL cards sent to long-time EchoLink friends

Perspectives on US Emergency Management

My involvement in emergency communications (EmComm) is due to my Elmers, Mark N7YLA, and Phat HS1WSK. I focused on the grassroots level for the simple reason of teaching by example. When I lived in a small rural farming community, there was only one 2m repeater in a province the size of Pennsylvania. With few amateurs in the area, my focus was on simple, single-handed portable local operating. I never got my HF rig set up. I settled for using what was available. I planned to relay information from surrounding farms and families to the village heads by phone, VHF, or runner. But my main goal was to raise awareness of local hazards to develop an emergency preparedness mindset in the community. I introduced lessons in the village elementary school that integrated these themes with the usual classroom academics. At the same time, I used STEM/STEAM methods and English language teaching to improve Thai rural public education and hopefully spark interest in the next generation of EmComm operators.

Rural Training Center-Thailand (RTC-TH) EmComm (which later became GECO)**:** The RTC-TH EmComm was egalitarian with a flat organizational structure. GECO operator functions were simple: 1) raising the alarm when something happened, 2) observing, gathering, and reporting pertinent facts to the head villager, 3) relaying information between the local community to the emergency responders to the subdistrict or district office (the lowest level of the Thai government). (See table on the right.)

Thailand		United States		
National Government	National Government	National Government	Fed. Law	US Federal Government
Provincial Government		Includes states, territories, tribal and insular, and other lands	State Law	State Government et al.
District Office		May not always exist in other non-state jurisdictions		County
Subdistrict		Local		Local
The laws, regulations, and policies are uniform		Federal & state have both exclusive and concurrent powers. Tribal lands have treaties with the federal government on a nation-to-nation level. Territories, insular and other lands may also vary from states.		

Returning to the US meant adapting the RTC-TH (now GECO) materials and methods to a different cultural landscape. As shown in the table above, US federal/state/county/local laws, regulations, and policies are the backdrops for local emergency response. The US government's emergency management system evolved from its earliest beginnings in 1803 and continues to evolve with each new disaster. This is because society, technology, and geopolitics are in constant flux. This makes emergencies and emergency response a game of whack-a-mole; disasters are unique combinations of hazards, people, and triggers, sometimes occurring randomly. Unexpectedly, and usually with

unknown surprises. Add rapid technological changes and unforeseen and unprecedented environmental changes, and we find ourselves in uncharted waters.

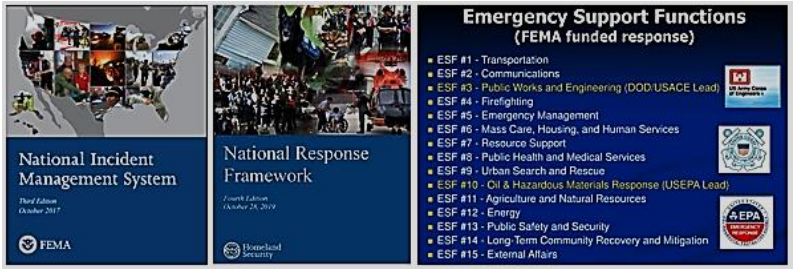
Federal/State Government Bureaucratic Hierarchies. Most national governments have bureaucracies with a vertical hierarchical structure. The table on the right shows the bureaucratic diversity of the US.

United States		
National Government	Fed. Law	US Federal Government
Includes states, territories, tribal and insular, and other lands	State Law	State Government et al.
May not always exist in other non-state jurisdictions		County
Local		Local
Federal & state have both exclusive and concurrent powers. Tribal lands have treaties with the federal government on a nation-to-nation level. Territories, insular and other lands may also vary from states.		

As a civilian EmComm volunteer, I never got involved with any emergency management (EM) bureaucracy. But in a recent graduate course about Interagency EM, I had culture shock about the maze of the US emergency response laws, regulations, and policies from the top down to the state level. The course stopped at the state level for good reasons. First, most of the Department of Homeland Security and Federal Emergency Management Agency emergency plans are policies, not mandates. States can accept, reject, or modify them to conform to state laws, regulations, and policies. Second, each state can be organized differently. For example, all states can legally have an army. Some have a National Guard (NG) (normally controlled by the governor unless federalized when the control shifts to the Department of Defense). Twenty-two states and Puerto Rico has "State Defense Forces" which are under the control of the governor and cannot be federalized. Third, some states assign emergency responsibility to 1) the governor or a designee; 2) a state agency, 3) the adjutant general; 4) the state police, or 5) a group overseeing a department. Job functions may be the same or similar, but the titles may be different.

US Emergency Response. Under the Department of Homeland Security (DHS), the Federal Emergency Management Agency (FEMA) is prepared to respond to emergencies originating from all hazards (including terrorism) to save lives and protect property, the economy, the environment, and national security. They take a comprehensive EM approach (e.g., preparedness, mitigation, response, and recovery). Emergency response is based on 1) the lowest jurisdiction starts and ends the response, 2) the tiered response doctrine (e.g., additional resources are added as needed once local response resources are depleted), 3) the response should be scaled, flexible, and adapted to the operational response capability, 4) the use of "unity of effort, unity of command" under the local Incident Command System (ICS), and 5) a readiness to act. These DHS/FEMA guidelines are available for free.

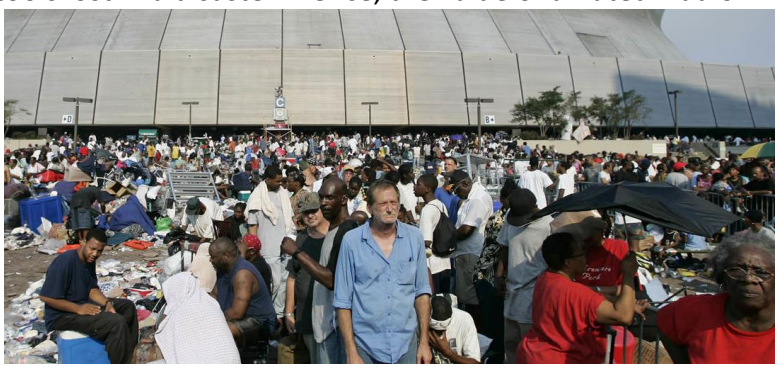
Significant Value of NIMS/NRF. The primary value of the NIMS/NRF is the standardized vocabulary and roles and responsibilities of the key players (e.g., all agencies) at federal and state government levels. The significance is that the state agencies may not share the same organizational structure or, categories and terminology for emergency resources. This can make it hard to accurately know what resources are being asked for and what is available. Although you may never talk with state or federal officials to ask for emergency resources, you should conform to the NIMS/NRF terms when inventorying local resources & identifying needed resources. This facilitates effective communication from your neighborhood to the responders who get the information to the ICS and up the chain of command. Using the same terminology consistent with the NRF and ESF can speed up matching



NIMS, NRF (which contains the ESFs).

requests for aid to the available resources in the system. The federal/state emergency response depends on accurate data from the disaster scene. The data flow goes from the bottom (the ICS) to the county/state and into the NIMS. Much depends on electronic digital technology. BOTH electricity and telecommunications are often the first EM tools lost in a disaster. Hence, the value of amateur radio.

During Katrina, the differences in the speed disaster relief got to Louisiana and Mississippi might have been due to partisan politics. But the facts remain that Louisiana did not have a very well-organized emergency response system in place. Louisiana had great difficulties requesting federal aid via EMAC because of 1) ***poor communications from the state capital to the disaster area***; 2) the state and local officials were unfamiliar with EMAC* in general, its procedures, and the request protocol in particular; 3) incomplete data about the needs and the available EMAC resources, and 4) the ineffective receipt and deployment of EMAC resources. [*Emergency Management Assistance Compact (EMAC) is the formal process for states to request assistance from other states and the federal government. It is a legal contract requiring time and effort to set up due to the complexities of federal-to-state laws which are different for each state. This complexity also applies to state-to-state mutual assistance agreements (MAAs) outside of EMAC.]



Katrina survivors waiting, waiting; 5 days of waiting, waiting.

Communications are Critical. Neighborhood volunteers (and our overseas readers) don't need to get into this bureaucratic quagmire. Residents know their neighborhood better than outsiders coming to help. Volunteers should learn to systematically observe and report factual data conforming to the categories and vocabulary of the ESFs (or the terminology of their government). This is the nuts and bolts data needed by the ICS when communicating with the rest of the state and national emergency responders. If a Neighborhood Watch group exists, use them as the core and add to their capabilities. This would include hazard awareness, emergency preparedness, and disaster observation/reporting. There's no need to reinvent the wheel.

You Are Responsibile For Your Safety, but...

If you live in a community, and you are the only person who prepares, what do you think will happen when a disaster strikes? What will all the other unprepared people do when they see you have water, food, etc.? This is why getting yourself prepared is only the first step in a long journey to helping to prepare your neighbors and build a stronger sense of community to be more resilient.

There are many sources focused on preparing the right equipment, materials, and supplies. But stockpiles can be destroyed or damaged by the disaster. Then what? GECO is committed to helping people prepare knowledgeably using community-based education including elementary students to adults.

Watch for future articles in this newsletter for more practical topics for neighborhood volunteers put NIMS/NRF ideas into local practice.

NIMS/NRF: Getting It on the Ground

Thoughts for Local Volunteer Observers

This article intends to bring the National Incident Management System (NIMS), National Response Framework (NRF), and Emergency Support Functions (ESFs) to the grassroots level for volunteer neighborhood emergency observers and communicators. Observing and reporting the status of community lifelines using the ESFs categories/terminology enhances the usefulness of these volunteer reports to emergency responders.

Purpose: Neighborhood disaster observations and reports must be done safely, accurately, and focusing on saving lives, monitoring the Community Lifelines, using the categories and terminology of the Emergency Support Functions (ESFs) of the National Response Framework (NRF).

Operative Definitions:

Observe and Report Safely: Volunteers should work in pairs. Their primary mission is to observe and report. They are NOT doing search and rescue, emergency medical treatment, or law enforcement. Whenever possible, they keep a low profile and do not draw attention to themselves. They minimize risks to themselves, their partner, and the others in their organization. Observations focus on saving lives and monitoring the community lifelines.

Accurate Reporting: Stick to the facts. Avoid giving opinions. Facts are obtained by 1) direct measurement, 2) an estimate using a reference chart or table (e.g., estimating wind velocity by the Modified Beaufort Wind Scale Chart), or 3) relative to landmarks or other means so other observers can use them to replicate your observations. Accuracy means the facts you report would be reported by others looking at the same scene. Accuracy is replicability.

Life-Saving: First, report the situation and call for help. Action beyond this is an individual decision that takes place at the moment. Discussing hypotheticals in non-emergency conditions is not the same. Search and Rescue and Emergency Medical treatment require special training and equipment. But these are also individual hard decisions only you can make when they happen. The first thing to do is to report the situation and request assistance.

Monitoring Community Lifelines: These are the critical infrastructure needed by first responders to access the disaster area and get additional equipment, materials, and supplies to support their effort. In some cases, second responders may follow quickly to repair or restore the infrastructure to further facilitate access and functionality for additional relief to get to survivors. Neighborhood groups should map their neighborhoods and identify the relevant items, and periodically update their maps. Observing and reporting the conditions of these is important.

The Community Lifelines	
Safety & Security	Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
Food, Water, & Shelter	Food, Water, Shelter, Agriculture
Health & Medical	Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
Energy	Power Grid, Fuel
Communications	Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
Transportation	Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
Hazardous Materials	Facilities, HAZMAT, Pollutants, Contaminants

Emergency Support Functions (ESFs): While you may never be big enough to show up on the radar for formal local government emergency planning and resource inventories, it is good to learn the vocabulary. Use it in your community lifeline observations and reports, to identify the needed emergency resources to the authorities. They will relay the data to the ICS. It can facilitate finding the added resources and how fast they get them. The ESF descriptions are given on the next page.

Roles and Responsibilities of the ESFs		
ESF	**Scope**	
ESF #1 – Transportation	• Aviation/airspace management and control • Transportation safety • Restoration/recovery of transportation infrastructure	• Movement restrictions • Damage and impact assessment
ESF #2 – Communications	• Coordination with telecommunications and information technology industries • Restoration and repair of telecommunications infrastructure	• Protection, restoration, and sustainment of national cyber and information technology resources • Oversight of communications within the Federal incident management and response structures
ESF #3 – Public Works and Engineering	• Infrastructure protection and emergency repair • Infrastructure restoration	• Engineering services and construction management • Emergency contracting support for life-saving and life-sustaining services
ESF #4 – Firefighting	• Coordination of Federal firefighting activities	• Support to wildland, rural, and urban firefighting operations
ESF #5 – Emergency Management	• Coordination of incident management and response efforts • Issuance of mission assignments • Resource and human capital	• Incident action planning • Financial management
ESF #6 – Mass Care, Emergency Assistance, Housing, and Human Services	• Mass care • Emergency assistance	• Disaster housing • Human services
ESF #7 – Logistics Management and Resource Support	• Comprehensive, national incident logistics planning, management, and sustainment capability	• Resource support (facility space, office equipment, and supplies, contracting services, etc.)
ESF #8 – Public Health and Medical Services	• Public health • Medical	• Mental health services • Mass fatality management
ESF #9 – Search and Rescue	• Life-saving assistance	• Search and rescue operations
ESF #10 – Oil and Hazardous Materials Response	• Oil and hazardous materials (chemical, biological, radiological, etc.) response	• Environmental short- and long-term cleanup
ESF #11 – Agriculture and Natural Resources	• Nutrition assistance • Animal and plant disease and pest response • Food safety and security	• Natural and cultural resources and historic properties protection and restoration • Safety and well-being of household pets
ESF #12 – Energy	• Energy infrastructure assessment, repair, and restoration • Energy industry utility coordination	• Energy forecast
ESF #13 – Public Safety and Security	• Facility and resource security • Security planning and technical resource assistance	• Public safety and security support • Support to access, traffic, and crowd control
ESF #14 – Long-Term Community Recovery	• Social and economic community impact assessment • Long-term community recovery assistance to States, local governments, and the private sector	• Analysis and review of mitigation program implementation
ESF #15 – External Affairs	• Emergency public information and protective action guidance • Media and community relations	• Congressional and international affairs • Tribal and insular affairs

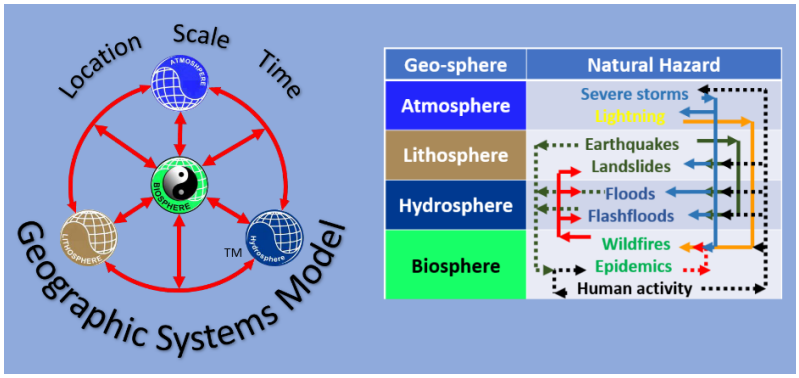
The Accidental EmComm Operator Presentation

To see the Accidental EmComm Operator click [here].

Amateur radio is a fun hobby for many. It has many facets to explore from the highly technical, intriguing experimental, adventurous DX-peditions, reaching for the stars, etc. But in an era of climate change and potential mega-disasters, some amateur radio operators may find themselves thrust into becoming accidental EmComm operators.

This presentation is a compendium of the notes and files going back to the early EmComm efforts in the Rural Training Center-Thailand, which led to the spinning off of GECO as an independent entity.

It may not be 100% perfect, but it uses the Geographic Systems Model to make people aware of the hazards, potential risks, and vulnerabilities they may be facing. This helps them to prepare for possible disasters and steps they can take to prepare. This presentation contains links to many of the articles and presentations covering the several years of projects linked to single-handed operations and tips and reference notes from rural Thailand, and some perspectives developed since returning to the US. Originally the circumstances on the farm in Thailand set the tone and pace for the accidental EmComm approach. With little to no money and little to no access to equipment, there was no choice but to work with what was on hand. This set the foundation for the GECO no-cost/low-cost, no-tech/low-tech adaptive technology approach.



Disasters have some harsh realities: 1) They are democratic as they strike rich/poor, prepared/unprepared alike with little to no regard for geo-political boundaries; 2) They always start locally, and if you are nearby, like it or not, you are the first responder; 3) The closest help to you might be local; 4) Even if local help is available until help arrives, you are on your own; 5) The farther you live from an urban center, the longer it may take for help to arrive IF it arrives at all; 6) A disaster can severely damage or destroy the best equipped and prepared group and facility effectively reducing a highly developed community to third-world conditions in a matter of minutes. At that moment, everyone must make do with what is left in the wake of the disaster. Any surviving amateur radio operators, who were not interested in EmComm operations have to decide if they will step up to the plate and become accidental EmComm operators.

Are you ready?