Rural Training Center-Thailand Emergency Communications Report

The RTC-TH EmComm
EchoLink® User Node 384040

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www.neighborhoodlink.com/org/rtcth   *Ready to Serve and Sustain Our Community*   E-mail: hs0zhm@gmail.com

You may post questions / comments to the Discussion area of our website

EchoLink® in Sam, RTC-TH Station #3

The current HSØZHM EchoLink® User station

Any licensed ham can get a global reach with an EchoLink® User node. It is another effective communication tool. The RTC-TH EmComm EchoLink station (User Node 384040) operates under call the sign HSØZHM issued to Gregory "Greg" Lee, RTC-TH Co-founder (aka US FCC KI6GIG).

Greg (HSØZHM)is a good friend of Mark (N7YLA), founder of GERC (Glendora Emergency Response Communications) located in Glendora, CA. He often collaborates with GERC on a variety of community outreach activities when they conduct international EchoLink® demonstrations.

The basic EchoLink® User node only needs 3 things: 1) a valid amateur radio license; 2) a working computer; 3) an Internet connection. This permits a ham to access EchoLink® and establish to world-wide communications well beyond the original design range of a basic 2m VHF / UHF radio.

Greg's key GERC contacts are:

- Mark (N7YLA) GERC founder, Elmer to many GERC hams, and prime organizer of GERC's radio licensing training classes and community service and outreach activities
- Jim (KG6TQT) and Frank (KG6TQV) the Trainers for FCC Technician Licenses and Scout Radio Merit Badges classes
- Dennis (KI6NQG) Scout leader and field EchoLink® volunteer control operator

These GERC hams are also active on the GERC Net conducted Tuesday evenings

Greg (HSØZHM)   *Mark (N7YLA)*   *Jim (KG6TQT)*   *Frank (KG6TQV)*   *Dennis (KI6NQG)*

2030 hrs Pacific Time. The GERC Net (of Glendora, CA) can be accessed locally by 2m VHF simplex or nationally and globally via EchoLink®.

A key advantage of EchoLink® is to by-pass poor atmospheric conditions that can make long range radio contact difficult. Unlike traditional ham radio, the Internet is critical to EchoLink® operations. In an emergency, if your Internet service is disrupted, EchoLink® will be of little use.

Mark (N7YLA) as GERC Net Control

The middle ground is using a ham radio in a disaster area to reach an EchoLink® Link or Repeater station that can then relay messages via the internet. News of the earthquake and tsunami in NE Japan in 2010 spread quickly by Internet once it got out of the disaster zone.

This is one reason why GERC set up an EchoLink® "Link" station with VHF / UHF radio capability. In the event of a disaster, IF an RF-enabled EchoLink® "Link" station and its Internet connection survived, other ham radio operators within radio or repeater range of the EchoLink® "Link" station (e.g. 32-64 km / 20-45 miles depending on terrain) could contact the functional "Link" station. The "Link" station could then use the Internet to pass messages around the world.
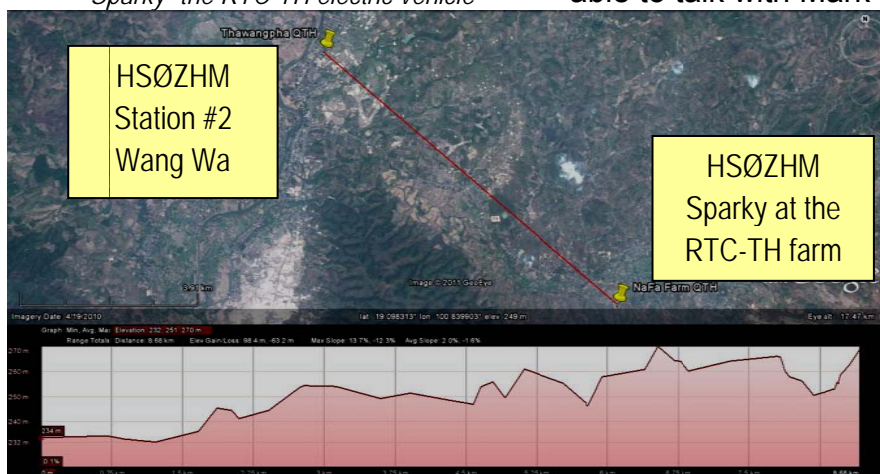

"Sparky" the RTC-TH electric vehicle

"Sparky, the Batt-mobile" is the RTC-TH's all electric demonstration vehicle. Its 8 deep cycle batteries could also be used to power our ham radios in an emergency.

Using borrowed equipment on my EchoLink® computer, I did a field test. Mark (N7YLA) and I connected our EchoLink® computers. I got in "Sparky" and drove to our farm ~7.8 km from the Wang Wa station. Using a Yaesu FH-912 (HT) with a 1/4λ whip magnet mount antenna on "Sparky", I was able to talk with Mark 12,820 km away!

Map and terrain profile from trial HSØZHM-L EchoLink® Gateway to our farm.

Mark received my signal with "full quieting." It doesn't get much better than that.

As a bonus, Jens (DL1BRJ) logged into my EchoLink® computer from Bremen, Germany! That was a surprise. We used EchoLink® to span the globe from Germany to Thailand to California. This confirmed the viability for me to plan setting up an EchoLink® Gateway like Mark's in Glendora, CA.

Some Comments about EchoLink®

EchoLink® is a free computer program created by Jonathan Taylor, K1RFD. It uses VoIP (Voice of the Internet Protocol) and lets hams talk over the Internet. [**Note:** Don't get sucked into arguing if this is ham radio or not. Stick to the fact that communication is taking place between hams. You'll see why later.] If you have a valid amateur license, you can download and use the program free of charge. Here is how to get started: Download the program using the link below: www.echolink.org/register_data.jsp

After installing the program, follow the instructions to register and validate your license. Then there is the challenge to get it working. Setting the ports on your modem router may be easy (if you are familiar with interactive online gaming programs) or it can be a nightmare if you are not so tech savvy. Ask your Internet Service Provider for help.

EchoLink® is a fast way for newly licensed hams to make worldwide contacts and to ***practice and develop good operating procedures!*** Don't get sloppy because you are not transmitting RF. Here's the pitfall. The photo on the right shows Dennis (KI6NQG) in control of his 2m VHF field radio GERC EchoLink station for JOTA 2011. A scout uses this radio to call CQ via the N7YLA Echolink® Gateway 3.2 km away. In

Dennis (KI6NQG) and a scout use a 2m VHF radio for an EchoLink® a QSO with my station in Thailand.

Thailand, 12,820 km away, we respond to them. Any local ham in range on the same simplex frequency as Dennis can hear the QSO. Those hams have no idea I am speaking via a computer and not a radio.

Even when you think you are having an EchoLink® computer-to-computer QSO, there could be a problem. Say you contact a ham with an EchoLink® computer (call it station "H"). Another station "M" with a radio interface is connected to "H" listening to your QSO. Everything you say is received by "M" and going out over "M's" radio. Realize VHF, UHF, and HF radios can be connected to EchoLink computers. Stations on frequency in "M's" area will also hear your QSO. You know you are on a computer-to-computer EchoLink® call with "H". You get lazy and don't give you call sign. "M" and those on radio's in "M's" area hear you as a poor operator. If they know you have a Tech license, you might be heard on HF frequencies NOT part of your approved privileges.

So when using EchoLink® ***always use proper procedure:*** 1) give your call sign at the start and end of a QSO; 2) on a prolonged QSO, give your call sign at least every 10 minutes. If you consistently do these things on EchoLink®, you will be well prepared when you begin RF transmissions. 🌐

Some Background on Thai Amateur Radio

Foreign residents or workers on long-term stays in Thailand may be able to get a reciprocal amateur radio license IF an agreement exists between their home country and Thailand. Fortunately, this is the case for Americans.

The eligibility requirements: 1) there is a reciprocal license agreement between Thailand and your country; 2) you have a current valid amateur license in the home country matching your passport; 3) you are legally allowed granted a long-term stay in Thailand (e.g. retired, married to a Thai spouse and living in Thailand; are a foreign worker employed in Thailand or have other legitimate business activity requiring you to be here).

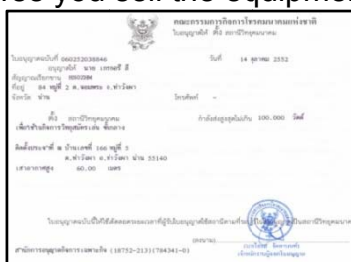*The National Broadcasting and Telecommunications Commission (NBTC) is the FCC of Thailand*

Thai amateur radio regulations require you to have 3 different licenses: An operator license, an equipment license (for each approved radio), and a station license (for each place from which you operate a radio). Your operator license is valid for 5 years and can be renewed so long as you meet the eligibility requirements. The equipment and station licenses are permanent (unless of course you sell the equipment or move).

Thai Operator License

Radio Equipment License

Radio Station License

King Bhumibhol Adulyadej (HS1A) is the royal patron of the Radio Amateur Society of Thailand (RAST). He received his license in 1989.

The 2m VHF hand-held transceiver is the most common amateur radio in Thailand. It is the most affordable for many Thais. Mobile rigs are available. A large majority of licensed hams in Thailand do not have radios. They tend to operate at club stations. You can see the Thai VHF band plan at www.qsl.net/rast/text/2mbandplan.htm. VHF max transmitting power is 10 watts.

The HF band plan was first approved in 1998 and expanded in 2007. HF equipment is difficult to get in Thailand, but the situation may be improving. The type approved equipment is seriously outdated. You can see the Thai HF band plan at www.qsl.net/rast/text/HFbandplan.html. Max transmitting power is 200 watts. As of Dec 2013, the NTBC was considering and reviewing many suggestions for change, so monitor the RAST website for updates.

Greg (HSØZHM),
RTC-TH Co-founder

The Rural Training Center-Thailand (RTC-TH) is at N 19.0745889, E 100.8663806, 250 m AMSL; UTC+7; Grid OKØ9kb; ITU zone 49; CQ zone 26, in Nan Province, Thailand. As GERC-AI (Auxiliary International), we often collaborate with the Glendora Emergency Radio Communications (GERC), Glendora, CA.

In mid-2013, the RTC-TH moved the HSØZHM EchoLink® User Node 384040 from its Station #2 in Ban Wang Wa to our newly constructed and licensed Station #3 in Ban Na Fa. Our current EchoLink® station consists of a dedicated desktop PC, 220 VAC UPS (uninterrupted power supply) and a telephone modem / router. [**Note:** The RTC-TH has 3 licensed operating stations (all in Nan Province): Station #1 (an undeveloped site on our demonstration farm) in Ban Na Fa, Chom Phra sub-district. Station #2 is in Ban Wang Wa, Tha Wang Pha sub-district. Station #3 is in our home in Ban Na Fa, Chom Phra sub-district. We also have another property (the "Hill Top") we can use as a portable operating site. Potentially, this could be another future license station due to many advantageous geographic site factors.]

The RTC-TH has an all-electric vehicle ("Sparky", the Batt-mobile) and a trailer ("Sam", the Volts-wagon, now serving as Station #3). All RTC-TH radios run on 12 VDC battery power. The EchoLink® computer (based in Ban Na Fa) requires 220 VAC power and a phone line for the Internet connection.

The HSØZHM EchoLink® User Node 384040 resides inside Sam, our portable radio trailer. It is a work in progress.

Dedicated EchoLink® desktop PC installed inside Sam

- Celeron 430 (1.8GHz) PC
- *monitor,*
- *keyboard and mouse*
- *microphone / headset*
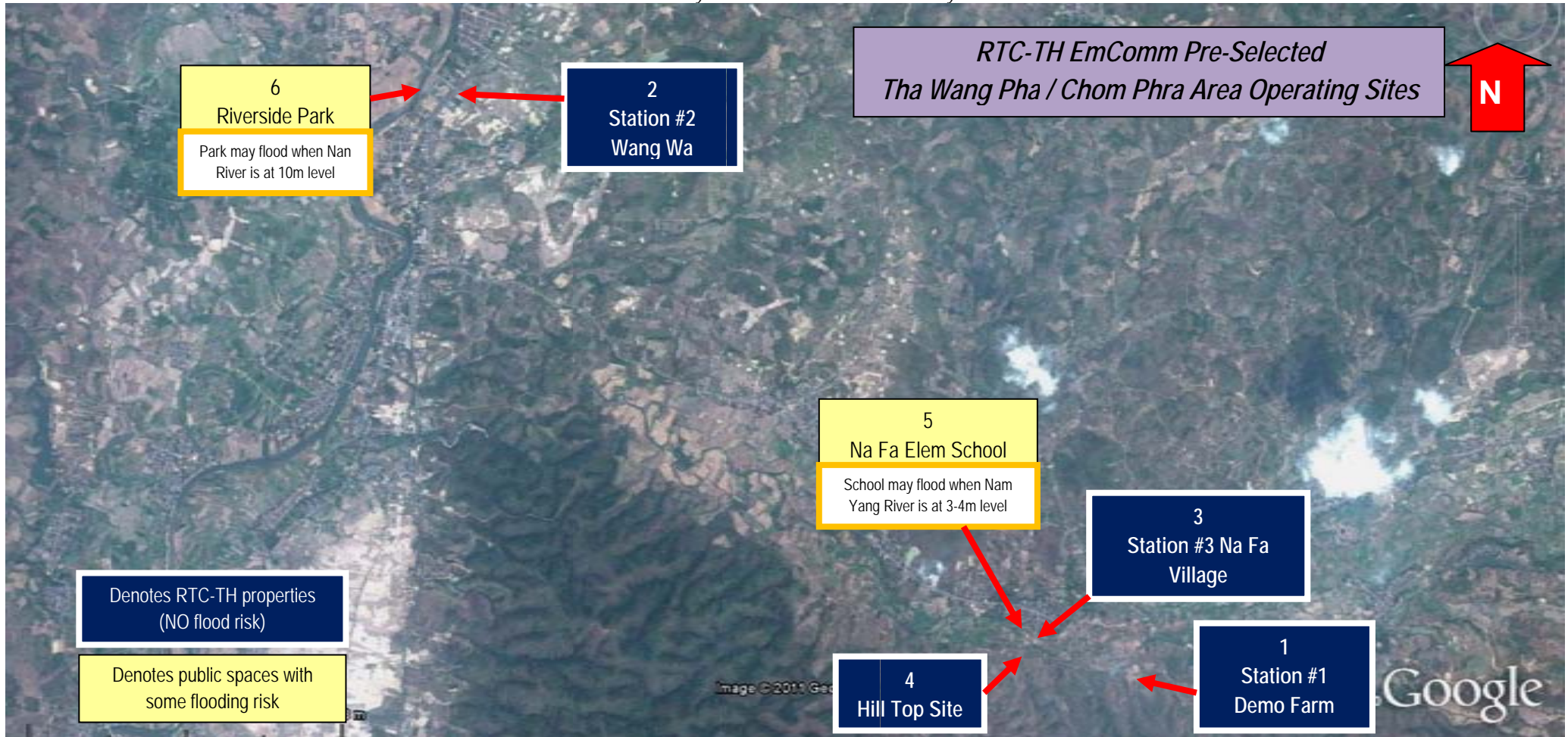

220 VAC power via UPS unit

TP Link TD854W wireless N ADSL2+ modem router

- Hardwired from the house to computer in the carport station. The modem router is actually in the 2nd floor office in the house.
- ISP TOT ADSL (512 kbps) (Telephone Org of Thailand).

Note: We hope to upgrade our EchoLink® User node to a "Link" node similar to Mark's (N7YLA). This will enable us to use VHF radios from all of our other stations and portable sites to talk around the world.

RTC-TH EmComm Pre-Selected Tha Wang Pha / Chom Phra Area Operating Sites

Location	Status	220 VAC	Internet	Dist (km)	Elev	Az frm #3	Notes
1. Ban Na Fa, Chom Phra (Demonstration Farm)	License station: Undeveloped #1	No	No	1.05	268m	115.78°	Undeveloped station: No facilities on site
2. Ban Wang Wa, Tha Wang Pha	Licensed station: Alternate Station #2	Yes	Yes	7.86	231m	312.88°	House (Former Base Station)
3. Ban Na Fa, Chom Phra (Village)	Licensed station: Base Station #3	Yes	Yes	0	250 m	-----	House / Carport (Current Base Station)
4. RTC-TH Hill Top site (Experimental Farm)	Portable Operating site	No	No	0.33	258m	224.16°	No facilities on site.
5. Ban Na Fa Elementary School	Portable Operating site	Yes	Yes	0.33	232m	304.28°	Public School; possible flood if river over 4m
6. Nan Riverside Park (Public Park)	Portable Operating site	No	No	7.96	227m	311.96°	Known to flood when river at 10-11m level

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RTC-TH Station #3: House in Ban Na Fa, Chom Phra Sub-District

HSØZHM Station #3
N 19.0745889 E 100.8663806 UTC +7
250 m AMSL OK09kb ITU 49 CQ 26
EchoLink® User Node 384040

In May 2013, we moved Sparky and Sam from Ban Wang Wa (Station #2) to Ban Na Fa. We soon got a new station license and set to work making Sam into our Ban Na Fa Station #3. This is a work in progress. We installed the ground rods and station ground bus panel, a tip-up mast (9 m tall), and mounted a Thai-made Slim Jim VHF 2 m vertical antenna to it. Plans are in the works to connect a 2m VHF radio to the EchoLink® computer and transition from User mode to "Link" operations. Once that is completed, we plan to add a multi-band HF antenna to complete the station's capabilities.
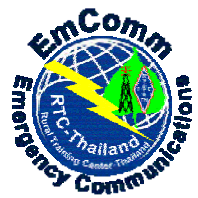
HSØZHM
N 19.07 E 100.86   UTC+7
OKØ9kb   ITU 49   CQ 26
EchoLink User Node 384040

N7YLA-L
34.11 N 117.85 W   UTC-8 PST UTC-7 PDT
DM14bc ITU 6 CQ 3 EchoLink Node 358124

Rural Training
Center-Thailand

GERC-AI

Ready to Serve
and Sustain Our
Community

Greg
HSØZHM
(KI6GIG)

For GERC EchoLink®
Demonstrations HSØZHM
operates using only the
computer to conduct the QSO.
No radio is involved on this
end for most demonstrations.

J-Pole
Vertical
antenna

KI6QNG
VHF radio 2
2m VHF simplex to
GERC EchoLink®
Gateway

12 VDC
Battery

KI6QNG
34.08 N 117.86 W
UTC-8 PST UTC-7 PDT
ITU 6 CQ 3

Internet

HSØZHM-L
RTC-TH EmComm /
GERC-AI EchoLink®
computer

Router

220 VAC

GERC base
station antenna

N7YLA
VHF radio 1
2m VHF
simplex

Interface

N7YLA-L
GERC ham shack
EchoLink
computer

Router

110 VAC

Glendora Emergency
Response
Communications

*Ham radio may not
change the world, but
it will change the way
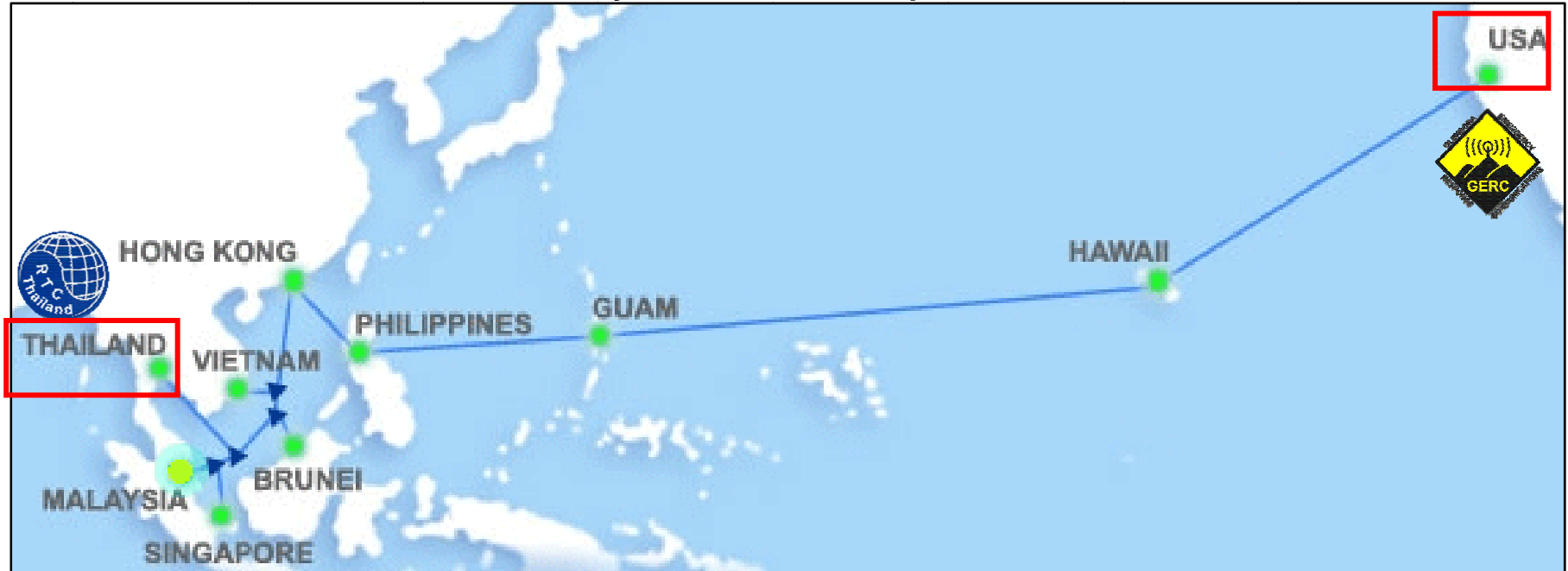that you hear it.*

Mark
N7YLA

Dennis
KI6NQG

Asia-America Gateway Undersea Fiber Optic Cable

We aren't certain, but it seems the Asia-America Gateway may be the physical Internet connection between our Echolink® node and GERC. As with most technology, the rate of change often exceeds print and web media information. Add to this the complexity of international agreements, corporate mergers, and the fact that our two stations are under different government jurisdictions and ISP (Internet Service Providers) contracts and you can readily understand how difficult it is to find the actual physical connections between our stations.

Another level of uncertainty arises when a "disaster" strikes. A few years ago, an earthquake in Taiwan caused a break in a Trans-Pacific undersea cable. Internet service in Thailand was cut. However, the Internet traffic was re-routed through Europe to the US. After a brief "outage", Thailand's internet service was restored. For most users, it was not obvious that the electrons were going in the opposite direction to get to the US. Connectivity was connectivity.

Most of us are totally unaware there is so much going on behind the scenes. We tend to take much technology for granted. For example, few give any thought to the idea that the electro-mechanical devices of telephones, fax and copy machines can function independent of language. No matter who speaks on a telephone using whatever language, their message comes out on the other end and is understood by their friend.

During many of our EchoLink® demonstrations, participants are amazed at the clarity of the sound quality. We are all speaking in our normal voices. No one is shouting, and we can clearly hear each other from the other side of the world about 12,820 km / 8,000 mi away!