

Providing community-based environmental education for



Rural Training Center-THailand: Technical Paper

ศูนย์ฝึกอบรมชนบท-ประเทศไทย: ทางเทคนิคกระดาษ

Ready to serve and sustain our community



RTC-TH Emergency Communications

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Community-based environmental education for the self-sufficiency and sustainability of small rural family farms

ชุมชนตามสิ่งแวดล้อมศึกษาเพื่อการพึ่งตัวเองและยั่งยืนชนบทขนาดเล็กครอบครัวฟาร์ม

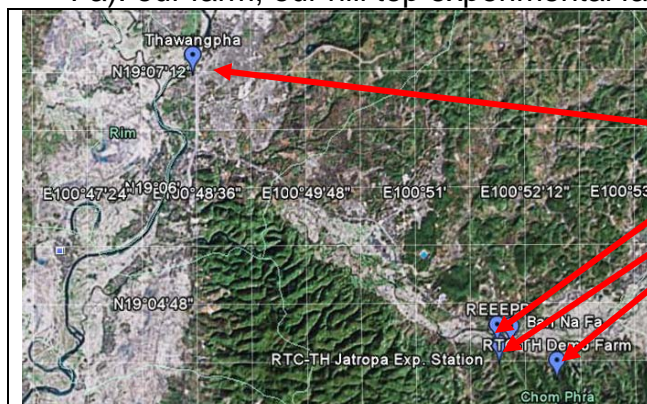
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The Rural Training Center-THailand EmComm (emergency communications) program is part of our community service effort. The most frequently occurring natural disaster in our area creating a state of emergency is flooding. But regardless of the cause, communities in distress are most certainly in urgent need of sustenance. In these times of distress, the RTC-TH is “ready to serve and sustain our community.”

We do not regard ourselves “experts” in EmComm. We are relative new comers to the field of amateur radio. But having lived in the earthquake prone Los Angeles greater metropolitan area and survived the Northridge Earthquake (1994), we cling firmly to our ideas of emergency preparedness. Our knowledge base in the natural sciences and geographic applications is the foundation for our emergency preparedness. We are still learning the field of amateur radio, but have a basic foundation upon which to build.

Primary Role; EmComm Relay Station: We see our role as an EmComm relay station. We are not properly equipped to deploy teams to disaster sites. Our radio station plans involve some mobility, but it is to be able to move our EmComm relay station within a limited geographic area to pre-determined “safe” operating locations. Our intent is to be a dependable EmComm radio link in our local area.

Operational Area: We are based in Nan Province (Changwat Nan) in northern Thailand (about 19 N 100 E), Thawangpha District (Amphoe Thawangpha), Thawangpha city (Tambon Thawangpha), Wangwa village (Ban Wangwa). We have 3 alternative operating positions in Jompra sub district (Tambon Jompra), Na Fa village (Ban Na Fa): our farm, our hill top experimental farm, and Ban Na Fa Elementary School.



The RTC-TH EmComm operating sites are:

- our town station site near the Thawangpha District Offices and District Police Station
- Ban Na Fa Elementary School
- Our hilltop experimental farm site
- Our demonstration farm station site

In the event the Nan River floods the Thawangpha area, we are prepared to relocate to sites in the Nam Yang Valley which are less prone to flooding.

Rural Training Center-Thailand: Emergency Communications

Equipment/Logistics: We have limited equipment and budget and cannot equip each location with radios and antennas. We have 1 ICOM 718 for HF work; for VHF we have 1 ICOM 2200T mobile unit, and 2 Yaesu FH-912 handhelds (these are the Thai type approved version of the VX-170). We decided to take a flexible mobile/portable modular approach for our EmComm plan. The ICOM 718 and 2200T would be mounted in an all electric vehicle (a Go-bag on wheels) but able to be dismounted and used in a container / trailer (portable radio shack). Both units will be equipped with portable HF and VHF antennas on masts capable of reaching a height of 4.8-6.4 m / 16-21 feet. Sparky and Sam each have radio batteries for about 525 amp hours of operation. In an emergency, Sparky (an all electric vehicle) has battery power available. However, the power available depends on how much driving has been done. The theoretical maximum is about 1350 amp hours on a full charge but with no driving. Pre-selected operating locations are listed below in the table.

Site	Status	Facilities (planned)	
Ban Wangwa QTH	Licensed station	<ul style="list-style-type: none"> Echolink user set up via computer (Possible Echolink Sys op set up) (semi permanent VHF antenna) 	Sparky / Sam need only connect to the antennas / ground rods to operate
Ban Na Fa QTH	Licensed station	<ul style="list-style-type: none"> (farm office with permanent HF and VHF antennas) (move Echolink Sys Op set up here once internet access is available) 	
Hill Top site	Portable operating site	(ground ring; semi permanent mast)	Sparky / Sam deploy portable masts / antennas as needed.
Ban Na Fa Elem School site	Portable operating site	(ground ring; possible use of existing mast)	

Being in a rural area, it may take a while for emergency relief crews to arrive. There is one main highway in the region. It is reasonable to prepare to “tough it out” until help arrives rather than to sit back and assume help will come quickly.



Sparky and Sam, newly delivered prior to the installation of any RTC-TH EmComm gear (~Oct 2009)

Sparky “the Batt-mobile” and Sam “the Volts-wagon” are the core of the RTC-TH EmComm program (to function primarily as an EmComm relay base). Sparky will be a scout/rover. Sam will be a portable radio shack. VHF radios link them while the HF

radio can be set up in either unit. Sparky will be equipped to conduct field surveys and recon mapping with an eye toward emergency preparedness planning. Sparky will be outfitted with supplies for 2 days for a crew of 2. Sam would be provisioned for at least 1 week for a crew of 2 (or 2 weeks depending on space available). If operating at our farm or hill top, provisions would be like being at home.

It is a cardinal rule in EmComm to be sure your family is safe before rendering assistance to others. Our main aim is to promote emergency preparedness and awareness as part of our commitment to self-sufficient / sustainable rural communities. Similar to our efforts in agriculture, we seem the most important task is to empower people to care for themselves.

Areas of Specialized Knowledge Base

- **Weather Observation:** The weather was a large part of my natural science teaching work. A series of weather observation lessons are being developed with an eye to disaster relief work. The RTC-TH has a program called MEWS (Mobile Emergency Weather Station) to collect local weather data in the immediate disaster area. These data can be useful in relief planning and helicopter flight observations. Both Sparky and Sam will be configured as MEWS platforms.
- **Geo-Hazards Assessment:** Sparky will be equipped to do “windshield” and field recon surveys. The data will not be of facilities design and site construction level detail. But they will be adequate for selecting emergency helicopter landing zones and provide recon maps of disaster areas when maps may not be readily available. Prior to an emergency, we intend to conduct local recon surveys to identify geo-hazards that affect emergency relief planning, routes, safe zones, and assess favorable radio operating sites.
- **Emergency Preparedness (EmPrep):** We are a grassroots organization. In an emergency, we aren’t going to argue the fine points about the purity of amateur radio. Emergency communications means effectively getting the word out by whatever means. Phat (HS1WKF) advocated an integrated emergency warning network using amateur radio and villagers with whistle signals to alert local residents to impending emergency conditions. Additionally, we intend to conduct community-based emergency preparedness education for families and individuals using the same mechanism as our REEEPP (Rural Environmental Education Enhancement Pilot Program) in elementary schools integrated with the Scouts and Girl Guide programs in the schools.
- **Education & Training:** Drawing on my extensive professional education background, we hope to conduct training programs in schools (as mentioned above). Also on the wish list are:
 - **Amateur Radio Operators:** We hope to help train other local Thai Ham radio operators in the areas of MEWS, Geo-Hazards Assessment, and EmPrep.
 - **Local government officers:** We are also willing to train local government officers at the Village (Uban), Sub district (Tambon) and District (Amphoe) levels in MEWS, Geo-Hazards Assessment, EmPrep, and how to effectively use the data in emergency preparedness planning.

Rural Training Center-Thailand: Emergency Communications

Future Work:

GERC-AI: We are looking forward to develop a firm sked with GERC to and work to improve our international EmComm capability with an eye to mutual support. We also hope to encourage other GERC Hams with international interests to form GERC-AI chapters in other countries.

EchoLink: We only recently got EchoLink set up in “user” mode to support the GERC Echolink demonstrations. It is fully expected that internet capability may be lost in a local emergency. But it is possible to connect by radio to others with EchoLink capability to help get the word out. We hope to step up to the next level to do radio to Echolink communications in the near future.

Antenna Installations: We are presently reviewing antenna resources and options. Our plans are summarized in the table below:

Site / Unit	Status	Facilities (planned)	
Sparky	Mobile unit	<ul style="list-style-type: none">Permanent HF and VHF antennas for full mobile operationAdditional HF and VHF antennas for mobile-at-rest operationAdditional HF and VHF antennas on push up masts for long-term fully parked operation	
Sam	Portable unit	<ul style="list-style-type: none">Semi permanent HF and VHF antennas for rapid mountAdditional HF and VHF antennas on push up masts for long-term fully parked operation	
Ban Wangwa QTH	Licensed station	(semi permanent HF and VHF antennas)	Sparky / Sam need only connect to the antennas / ground rods to operate
Ban Na Fa QTH	Licensed station	(permanent HF and VHF antennas; ground ring)	
Hill Top site	Portable operating site	(ground ring; semi permanent mast)	Sparky / Sam deploy portable masts / antennas as needed.
Ban Na Fa Elementary School site	Portable operating site	(ground ring; possible use of existing mast)	

Radio Operations Details: Thailand only recently (in the last 2 years) officially approved an HF band plan which has been modified at least once. The recent protests have disrupted normal government business delaying many details in the regulations affecting amateur radio. However, we are presently reviewing the official Thai HF band plan, the IARU Region III Disaster Communications guidelines especially relative to Global SET “centers of activity”. We hope to coordinate closely with GERC to identify International EmComm guard frequencies for our mutual benefit.

It is often said “the best made plans of mice and men often go awry.” Despite that, in the RTC-TH we our approach is “if you are going to dream, dream first class.” The reality may not match the dreams, but the dreams inspire us to try out best. We don’t ignore the challenges we face, but we feel that whatever we can accomplish will definitely not do harm to others. And in the end, our efforts should help improve things by adding to the EmComm and EmPrep activity in the area.