

## September 2025 PMKCA Newsletter, Part 2

### ***Situational Awareness & Neighborhood Clusters***

**Concepts and activities that can save lives and property  
in wildfires and other disasters.**

Denning Powell, CERT Team Lead  
Ham: WH6GDC

*(Note: This is Part 2 of a two-part September Newsletter, coming as two emails.)*

#### **SITUATIONAL AWARENESS**

Part 1 of this two-part newsletter (sent earlier today) describes the good things that can be done by community collaboration to keep us all quickly informed about wildfires. Part 2 of the newsletter offers a status update on another PMKCA project that is different, but related in two fundamental ways:

- raising awareness in our residents about the characteristics of developing emergency situations, and
- establishing effective communications pathways to spread that awareness through the community for such an emergency.

#### **FIRST, SOME BACKGROUND**

Knowing what the hazards are, where they are, how they might hurt you... basically, that's situational awareness. I learned it in Vietnam, but it's a good thing to have whether you're in a military or civilian context. Take just a moment to reflect on what Winston Churchill said about combat: "Nothing quite so exhilarating as being shot at and missed".

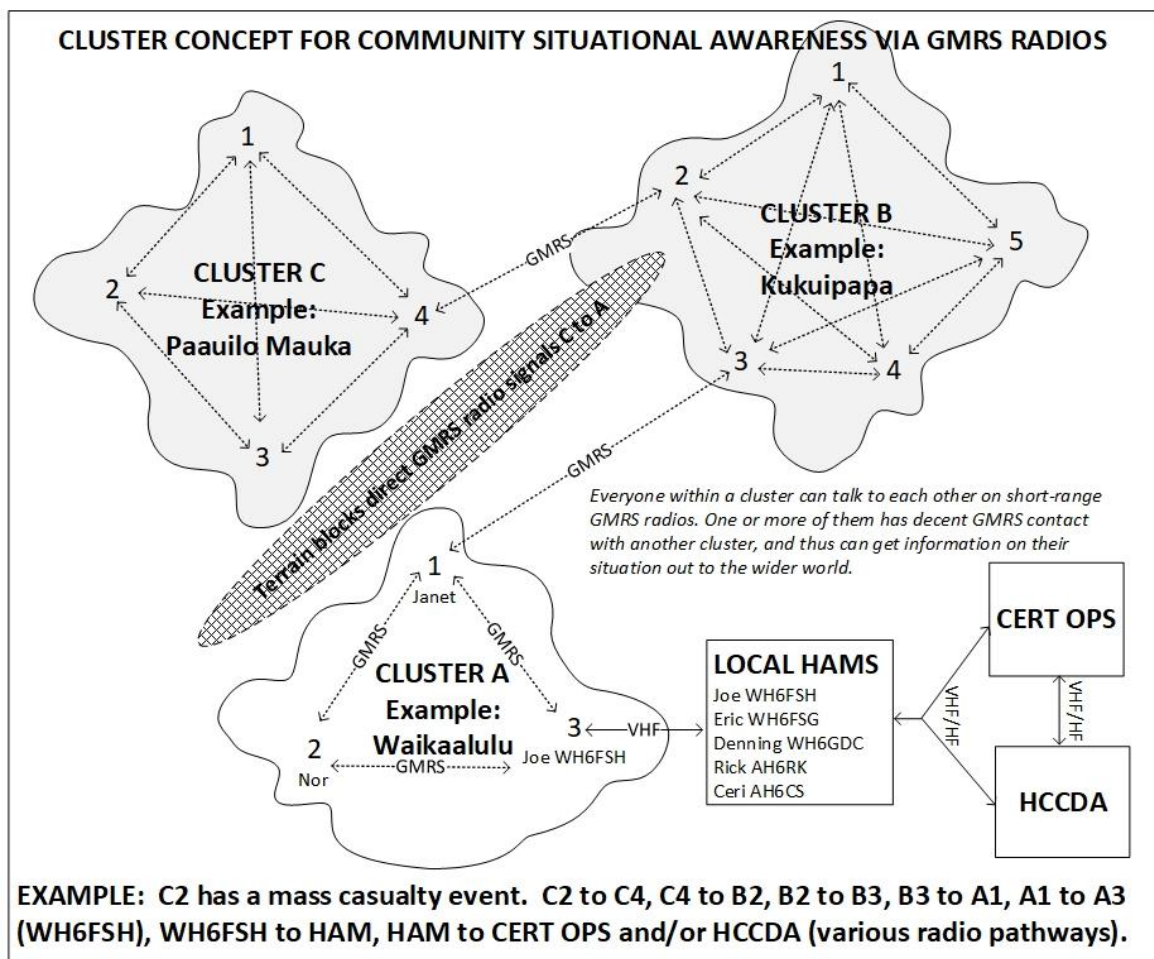
Now reflect on that quote applied to a civilian context – as I'm sure our police, fire, EMTs and other emergency responders do on a much more frequent basis than the rest of us. And realize that *a good way to achieve exhilaration after an emergency is having been prepared for it in the first place.*

For wildfires, awareness depends on effective and rapid communication amongst a lot of folks. That's what Ruth and Eric Burkhardt are diligently working to put in place.

## OUR RELATED PROJECT – NEIGHBORHOOD CLUSTERS

Our parallel project to PMKCA's "Rapid News" bulletins is aimed at a different emergency – a nasty big hurricane and its aftermath. It assumes that all general use communications are down -- no power lines, no phone landlines, no cellphone towers, satellite antennas blown off roofs, thus no 911 response. Community damage is severe, injuries are numerous, roads are blocked.

The concept for this project is to create little clusters of adjacent neighbors who have short-range radios, called GMRS (General Mobile Radio Service) devices. Folks within a cluster can talk to each other, then through contact with adjacent clusters, can ultimately reach one of our PMKCA ham radio operators who can get to CERT. At that point, there are various potential means of both voice and digital radio contact to the Hawaii County Civil Defense Agency (HCCDA) Emergency Operations Center (EOC) in Hilo and to other responding organizations – hospitals, Red Cross, Salvation Army, and so forth.



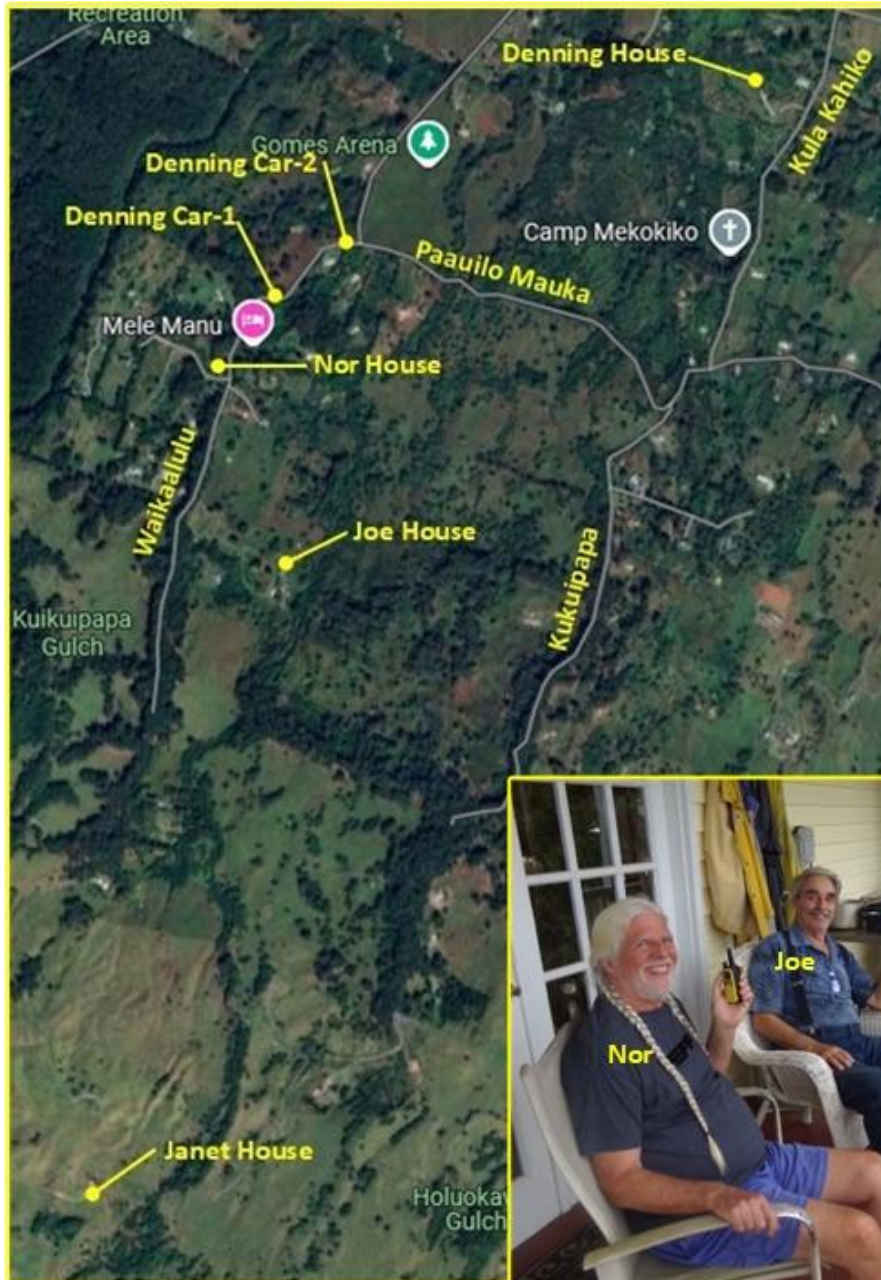
Wow, this is more than a little clunky, you think. Yup, it is. And we all naturally wonder how practical it is compared to our convenient cell phones and pads. It's not. But in a bad emergency with everything else down, hey... you do what you gotta do to get (and spread) situational awareness within the community. So, our experiment is basically a proof-of-concept exercise at this point. It deals with both human factors and technology factors.

Say you're a hurricane casualty at Location 2 in Cluster C. Your ankle is twisted enough so you can barely hobble on it. *Who ya gonna call, who ya gonna call... GhostBusters?* But your cell phone is dead, and of course you're already hoarse from yelling across the fence to your nearest neighbor who evidently is out of earshot because he's underneath the rubble of what's left of his house. And what little you can see of other houses doesn't look good either. Fortunately, your GMRS radio is in your hand, and everyone in Cluster C had turned them on and tested them before the hurricane hit.

One of those little handheld radios effectively gives your voice a lot longer range – typically from half a mile to a bit over a mile. That's a lot further than you can yell. We recently tested the feasibility of using those radios in a cluster concept, and the results of that little exercise are below.

## **HUMAN FACTORS**

One of our January meeting door prize winners was Janet Eblen. She's way up at the end of Waika'alulu Road. But Joe Clarkson and Nor Risley, lower down on that road, are within her radio range. The three of them formed a geographic cluster – a coalition of the willing to run an initial test exercise.



Janet loaned her two other radios in the set to Nor and Joe for exercise purposes. Denning used an older GMRS radio from CERT inventory.

Joe in the center of the cluster could talk to everyone effectively, almost down to the intersection of Waika'alulu and Pa'auilo Mauka. Janet at the south edge of the cluster could only talk to Joe. Nor could talk to Joe and down to the intersection but couldn't reach Janet. One of our August picnic Bingo prize winners just added three more GMRS radios to

that cluster – Robert Emery, age 8, is currently having a high old time radioing his dad and neighbors.

*Skip over the next three sections if they glaze your eyes over; they're just in there for technical completeness of this story.*

## TECHNOLOGY FACTORS

Midland GXT1000 radios, set to channel 15 (frequency 462.5500), and set to high power (which their spec says is 2.5 or 2.8 watts depending on the model). These data are consistent with Midland's general estimates of 1.0 to 1.5 miles for the range of these radios in mixed terrain and vegetation like ours. Joe is a ham radio operator (WH6FSH) and has much wider radio reach across the entire PMKCA area. If contacted by someone on GMRS radios, he can relay that call and ask for help.

## LOCATION DATA

|               | Lat       | Long        | Elev MSL | Distance from Joe | Bearing from Joe |
|---------------|-----------|-------------|----------|-------------------|------------------|
| Joe House     | 20.025942 | -155.431733 | 2323     | ---               | ---              |
| Janet Yard    | 20.011292 | -155.437338 | 2936     | 1.03 mi           | 196.63 deg       |
| Nor House     | 20.030495 | -155.433439 | 2189     | 0.33 mi           | 341.35 deg       |
| Denning Car-1 | 20.032205 | -155.431922 | 2078     | 0.42 mi           | 358.94 deg       |
| Denning Car-2 | 20.033499 | -155.429854 | 2026     | 0.52 mi           | 013.35 deg       |

*Denning was mobile, in two locations.*

## COMM PATTERN

|                | Heard by → Joe | Janet | Nor | Denning-1 | Denning-2 |
|----------------|----------------|-------|-----|-----------|-----------|
| Transmitted by |                |       |     |           |           |
| Joe            | ---            | 4/7   | 4/8 | 4/8       | 3/5       |
| Janet          | 4/8            | ---   | 0/0 | 2/4       | 0/0       |
| Nor            | 5/9            | 0/0   | --- | 5/9       | 4/8       |
| Denning-1      | 5/8            | 1/1   | 5/8 | ---       | ---       |
| Denning-2      | 4/7            | 0/0   | 4/8 | ---       | ---       |

*X/Y = X means clarity of the voice (1 to 5) and Y means strength of the signal (1 to 9) -- all ratings are subjective based just on hearing, nothing measured on a meter. Green means usable contact, yellow means marginal, red means no contact.*

## BOTTOM LINE

The cost isn't bad: \$50 to \$100 for a GMRS radio set and charger (depending on how many radios come with that charger), then \$35 for a 10-year radio license from FCC (no test required, just file a registration and get a license). Kids under 18 can use them under their parent's license. The time and effort required to pull friends and neighbors together into a

cluster isn't particularly burdensome and it's actually a lot of fun – a great way to build relationships.

The clustered GMRS concept for emergency communications, called “emcomm”, is a last-resort backstop for when all normal communication pathways have been wiped out by a major disaster. (Here, a hurricane is contemplated, but a big fire might have the same result if it fries cell towers and landlines.) Based on the experiment results, the cluster concept proved viable for the Waika'alulu area. Extrapolating from this data, adjacent GMRS clusters to the east and further south could probably reach two or three of our six PMKCA hams directly, or if not directly, by relay. So, more tests will proceed if coalitions of the willing in other areas would like to step up with their prize radios or would like to buy their own.

## **THE BIGGER PICTURE**

From a broader perspective, local emergency responders (police, fire, EMTs) need to know where the worst problems in an area are so they can address them first. The same is true for the yet-broader perspective of County-level resources like HCCDA. Good information flow in both up and down directions can make situational awareness much better and make effective response a lot faster. Resilient, effective communications capability is key during any emergency.

As a practical matter, mauka Pa'auilo and Kalōpā – like most of the rural areas in Hāmākua – will not be high on the priority list for County attention because they are thinly populated. Denser populations and housing will get attention first because that's statistically where the most casualties and damage will occur.

HCCDA has consistently recommended that communities set up their own communication strategies that “reach the last person in the last house on the last street”. In our area self-reliance is a good objective for emergency preparedness. So is developing situational awareness at a neighborhood level. Effective communication on GMRS radios feeds into that.

## **CAVEATS**

Now, here's the rub with social experiments like this. They take some commitment of time and effort and money, and quite naturally people weigh this against the likelihood of such an emergency event happening in the first place. That's a balancing act, everyone has their own personal take on it, and that's perfectly okay. The basic concept of cost vs benefit is worth pondering at the onset of any project; none of us (so far as I know) has unlimited time/effort/money.

There are other evolving strategies to provide communications resilience when normal sources are down. For example, an app called *Meshtastic* lets you send text messages to neighbors' cell phones without requiring cell towers to be active. All it requires is a small inexpensive device with an antenna, blue-toothed to your phone. It's an interesting concept and is proving to be quite viable, but you're limited just to text -- there's no voice capability - so you lose some of the immediacy of vocal exchanges that GMRS handheld radios provide.

Technology is moving fast in this area. Any solution, whether it's handheld radios or Meshtastic devices or something else, needs to be understood and appreciated by all participants. Human factors become important: keeping devices charged and operational, practicing with them once in a while, talking to your neighbors about the comm process often enough to stay current.

Situational awareness, and emergency communication - people being aware of the conditions around them and in close touch with their neighbors - are the two fundamental principles here. We in PMKCA and CERT urge you to know your neighbors, to care about them and allow them to care about you, and to reach out to them in emergencies. We are also willing to help neighborhood clusters form and to share knowledge and best practices that will help keep us all safer in a disaster.

Anyone interested in this project (or variations thereof), please call Denning Powell at 808-776-1935 or email to [powelldenning@hotmail.com](mailto:powelldenning@hotmail.com). It's a work in progress and would surely benefit from exposure to different perspectives.

~~~~~ **COMING UP!** ~~~~~

*The DATE and PLACE HAVE BEEN SET for...*

**PMKCA's First(?) Big Rummage Sale,  
Bake Sale, and More!**

**Saturday, October 25, 2025, 8am to 1pm**

**At the Pa'auilo Hongwanji**

**44-1477 Hauola Rd. (Old Town Pa'auilo)**

*Reply to any email about the Rummage Sale  
to reserve a table or volunteer to help.*

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Pa'auilo Mauka Kalōpā Community Association

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