

Lee Co ARES TRAINING NET

APRS: More Than Just Dots on a Map

By WB5YYQ

Opening

Good evening, everyone. Tonight's training topic is "APRS: More Than Just Dots on a Map."

APRS is Automated Packet Reporting System, and has been around since the 1980's. In the United States, the standard APRS frequency is 144.39 Mhz FM. When most people think about APRS, they immediately think about seeing little icons moving across a map on a computer screen. That is certainly one of the things APRS can do, but it is only one part of the picture.

APRS can be thought of as an amateur-radio information network. It can directly distribute location information, messages, weather observations, bulletins, and other useful information to stations throughout an area or relayed via digipeaters or iGates to far distant lands.

For emergency communications and public service events, that ability to share information can be very useful. So tonight, rather than getting into the technical details of how APRS works, I want to concentrate on what we can actually DO with it.

1. Tracking People and Vehicles

The most obvious use of APRS is tracking.

Imagine we have an ARES team supporting a parade, bike ride, marathon, search-and-rescue operation, or storm response. Several operators may be moving around the area in vehicles or on foot.

Instead of asking over the voice net, "Where is Unit 3?" we may be able to look at an APRS display and see the last reported position.

That can provide a quick picture of where resources are located. It can also be useful for keeping track of mobile operators who are moving between checkpoints, shelters, staging areas, or other locations.

There is an important point here: APRS tracking should supplement—not replace—good voice communications and established net procedures. The APRS position is only as current as the station's last transmission, and equipment or coverage problems can affect what we see.

But when it is working properly, it gives the net another source of situational awareness.

2. Short Text Messaging

APRS can also be used for short text messages.

For example, an operator could send a brief message to another APRS-capable station. Depending on the equipment and network configuration, messages can travel through radio stations and gateways.

Think about a situation where the voice net is busy. If the information is not urgent and does not need to occupy the voice channel, a short APRS message may be another way to get it to the intended operator.

It is important to remember that APRS messaging is not a replacement for the voice net or for formal emergency traffic. Critical or time-sensitive information should still use the communications method designated by the incident or net control.

But for routine coordination, short status messages, or non-urgent information, APRS messaging can be another useful tool in the toolbox.

3. Weather Information

Another capability that is sometimes overlooked is weather reporting.

APRS stations can transmit weather information such as temperature, wind speed and direction, rainfall, and other observations. Home weather stations can automatically put that information onto the APRS network.

Why does that matter to ARES?

During severe weather, having weather observations from multiple locations can help build a more complete picture of what is happening across an area.

A weather station may also be useful during public service events. For example, if we are supporting an outdoor event, knowing the weather conditions at several locations can help event coordinators and emergency personnel make better decisions.

Again, APRS weather data is an additional information source. It should not be treated as a substitute for official weather information or trained weather-spotter reports, but it can be a very useful supplement.

4. Objects, Locations, and Bulletins

APRS can also put information on a map that is not tied to a moving radio.

These are commonly called objects or items. They can be used to identify locations or resources.

For example, during an event we might want to identify a checkpoint, a rest area, a communications post, a shelter, or another important location.

In the right setup, those locations can be displayed on APRS mapping software so that operators have a common visual reference.

APRS can also distribute short bulletins or announcements. This provides another way of getting information out to stations monitoring the APRS network.

For an ARES operation, the important idea is that APRS can communicate more than “where am I?” It can help communicate “what is here?” and “what is happening here?”

That makes APRS much more interesting from an emergency-communications standpoint.

5. Situational Awareness

When you put all of those capabilities together, you get situational awareness.

Imagine opening an APRS map and seeing several mobile operators, fixed stations, weather stations, repeaters or digipeaters, and important event locations.

That can give an operator a quick visual picture of the communications environment.

For an emergency communications team, knowing where resources are located can be extremely helpful. It can help Net Control understand where operators are, help field teams understand what resources are nearby, and provide information that may not need to be spoken repeatedly over the voice net.

The real value isn't the map itself. The value is the information the map represents.

6. APRS Bots - Commands used to Request Information

There are many APRS BOT commands that can be sent to request specific information, such as: weather forecasts, last known position of an operator, satellite passes, send text message to a cell phone, send message to a email address, request info on the nearest 3 repeaters, where is the nearest hospital/grocery/pharmacy, and sending a message through the Winlink network using APRS, etc. Some of these commands are listed below:

The BOT message format is typically: "To" "Message" "additional descriptor"

WXBOT Today 77001 - to request weather forecast based on your zipcode;

MPAD grid EM10me – to request weather forecast for a grid square;

MPAD cwop – weather from the nearest civilian weather station;

MPAD POSMSG email address - to send detailed position report to an em

MPAD WhereAml – gives detailed location of your last APRS position beacon;

MPAD WhereIs WB5YYQ-7 – gives detailed location of a callsign from their last APRS position beacon;

MPAD SATPASS ISS – gives next satellite pass information for a listed satellite;

MPAT SATFREQ ISS – gives frequency that satellite uses;

MPAD REPEATER – gives information on nearest repeater, frequency, offset, tone, distance, capabilities.

MPAD OSM Hospital (or pharmacy, grocery, etc) – gives location of nearest requested item;
OSM=Open Source Mapping.

MPAD info or help – to get a list of MPAD commands;

FIND WB5YYQ-7 to request when and where an operator was last heard.

WHO-IS Callsign to get a abbreviated QRZ type lookup for an operator;

SMS @cellnumber message - to send a text message to a cell phone;

7. ARES Applications

So, where could we use APRS in an actual ARES operation?

A few possibilities include tracking emergency-response vehicles, tracking operators during a public-service event, identifying shelters or staging areas, sharing weather observations, sending routine short messages, and providing a visual picture of deployed resources.

And there are many other possibilities.

The key is to think of APRS as another communications and information tool—not as a standalone emergency-communications system.

The best ARES operations use the right tool for the right job: voice, digital messaging, Winlink, APRS, telephone, internet services when available, and other systems as appropriate.

Closing

So, to wrap up, APRS is much more than dots on a map.

It can provide tracking, short messaging, weather information, location objects, bulletins, and situational awareness.

For ARES, the biggest advantage may be the ability to share information without putting every piece of information on the voice net.

It gives us another way to know where resources are, what is happening, and what information is available.

I'll leave you with a question for the group:

“If you were deployed tomorrow for an ARES operation, and you could use only ONE APRS capability, which would you choose—tracking, messaging, weather, objects and locations, or situational awareness—and why?”

That's tonight's training topic. Back to Net Control.