

## CERT Team Meeting Reminder - August 26, 2024 6:30p



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## Meeting Reminder

Greetings! This is a meeting reminder for our upcoming meeting...

**CERT Communications**

Mon, August 26, 6:30pm – 9:00pm

[See the CERT Calendar](#)

## Coming Up

**Munford Celebrate** - there's a need to schedule volunteers for this day. Under the leadership of Doug Justice, we have the booth to conduct the promotion the team wants to do. A strong showing by our team is essential to ensure our desires are fulfilled.

Training - the training schedule is always at the Constable website, CERT, Calendar:

### **CERT Communications**

Mon, August 26, 6:30pm – 9:00pm

## The Role of Amateur Radio in Natural Disasters

In the age of smartphones, satellite communications, and internet-based technologies, one might assume that traditional forms of communication, like amateur radio, have become obsolete. However, when natural disasters strike and modern infrastructure fails, amateur radio operators—often referred to as "hams"—play a critical and irreplaceable role in emergency response efforts. Their ability to provide reliable communication in the most challenging circumstances makes them an essential part of disaster preparedness and response.

### **The Resilience of Amateur Radio**

One of the primary reasons amateur radio is so valuable during natural disasters is its resilience. Unlike cellular networks and internet services, which rely on a complex infrastructure of towers, cables, and servers, amateur radio operates on a much simpler and more robust system. Ham radios can function independently of the power grid, often powered by batteries, generators, or even solar panels, allowing operators to continue communicating even when conventional systems are down.

Moreover, amateur radio does not depend on a centralized network. This decentralized nature means that even if part of the system is disrupted—such as during a hurricane, earthquake, or flood—other parts can continue to function. This makes it an ideal backup communication system in the event of widespread infrastructure failure.

### **Bridging Communication Gaps**

During natural disasters, communication is often one of the first casualties. Cell towers can be knocked out by strong winds, and flooding can damage underground cables, leaving entire communities cut off from the outside world. In these situations, amateur radio operators step in to bridge the communication gap.

Ham radio operators are often among the first to establish contact with affected areas, providing vital information to emergency services and coordinating relief efforts. They can relay information about the extent of the damage, the needs of

the community, and the status of rescue operations. This information is crucial for prioritizing and directing resources where they are most needed.

In addition to local communications, amateur radio operators can also establish long-distance contacts, known as "DX" communications, to relay information to and from areas that are otherwise inaccessible. This capability can be particularly important in remote or isolated regions where other forms of communication are unavailable.

### **Supporting Emergency Services**

Amateur radio operators are not just hobbyists; they are often highly skilled communicators with specialized training in emergency operations. Many hams are members of organizations like the Amateur Radio Emergency Service (ARES) or the Radio Amateur Civil Emergency Service (RACES), which coordinate with local, state, and national emergency management agencies to provide communication support during disasters.

During a disaster, these operators can assist emergency services by providing supplementary communication channels, especially when primary systems are overloaded or inoperative. They can help coordinate the movements of first responders, relay messages between different agencies, and even assist in search and rescue operations by providing real-time communication between teams on the ground and command centers.

In some cases, amateur radio operators have been instrumental in saving lives by transmitting distress signals from people trapped in remote or inaccessible areas. Their ability to establish communication links when all else fails can make the difference between life and death in critical situations.

### **Training and Preparedness**

One of the key strengths of the amateur radio community is its commitment to training and preparedness. Many hams regularly participate in emergency communication drills and simulations, ensuring they are ready to respond quickly and effectively when a real disaster strikes. These drills often involve setting up and operating radio stations in difficult or improvised conditions, mirroring the challenges that might be faced during an actual emergency.

Additionally, amateur radio operators often work closely with local emergency management agencies, helping to integrate amateur radio capabilities into broader disaster response plans. This collaboration ensures that hams can be mobilized rapidly and effectively when needed.

### **Community Resilience and Public Service**

Beyond their technical skills, amateur radio operators are deeply embedded in their communities. They are often the neighbors, friends, and family members of the people affected by disasters, giving them a unique perspective on the needs and challenges faced by those they are helping. This community connection makes hams not only effective communicators but also trusted sources of information and support during crises.

Moreover, the amateur radio community has a long tradition of public service. Many hams are motivated by a desire to give back to their communities, and they view their skills and equipment as public resources to be used for the greater good. This spirit of volunteerism is a key factor in the effectiveness of amateur radio in disaster response.

### **Final Thoughts**

In a world increasingly reliant on complex and fragile communication technologies, the simplicity, reliability, and flexibility of amateur radio stand out as critical assets in disaster response. When other systems fail, amateur radio operators provide a lifeline, connecting communities, supporting emergency services, and saving lives. Their contributions highlight the enduring importance of this time-honored form of communication, reminding us that sometimes, the simplest solutions are the most effective.

As natural disasters continue to pose significant challenges to communities around the world, the role of amateur radio will only grow in importance. Investing in and supporting the amateur radio community is not just about preserving a hobby—it is about ensuring that when disaster strikes, we have the tools and expertise necessary to maintain the vital connections that keep us safe.

## Let's Connect...

[Constable's Facebook Page](#)

[CERT Facebook Page](#)

## The Impact of Disasters on Cellular Service

We rely heavily on cellular networks for communication, navigation, and accessing information. However, when natural disasters strike, these networks can quickly become compromised, leaving communities without reliable means of communication. Understanding what happens to cellular service after a natural disaster is crucial for both preparedness and response efforts.

### How Cellular Networks Work

Before diving into the impact of natural disasters on cellular service, it's important to understand how these networks function. Cellular networks rely on a network of cell towers that communicate with mobile devices via radio signals. These towers are connected to each other and to the broader telecommunications infrastructure through fiber-optic cables, power lines, and central switching centers.

When you make a call, send a text, or use mobile data, your device connects to the nearest cell tower, which then routes your communication through this interconnected network. The entire system depends on a reliable power supply, physical infrastructure, and uninterrupted data flow between towers and central hubs.

### Vulnerabilities of Cellular Networks

Cellular networks, while robust under normal conditions, have several vulnerabilities that can be exposed during natural disasters:

1. **Power Dependency:** Cell towers and the equipment that supports them rely on a continuous power supply. Most towers have backup batteries or

- generators, but these are typically designed to last only a few hours to a few days. Extended power outages can render these towers inoperative.
2. **Physical Damage:** Hurricanes, earthquakes, tornadoes, and floods can cause significant physical damage to cell towers, antennas, and the fiber-optic cables that connect them. High winds can topple towers, while flooding can damage underground infrastructure. Earthquakes can disrupt the foundations and structures that support these networks.
  3. **Overloaded Networks:** In the immediate aftermath of a disaster, the surge in communication traffic can overwhelm cellular networks. People trying to contact loved ones, emergency services, and accessing information all at once can lead to network congestion, making it difficult for calls or texts to go through.
  4. **Disrupted Backhaul Connections:** The “backhaul” refers to the connection between cell towers and the central network that routes calls and data. If these connections are severed—whether by power outages, damaged cables, or network failures—cell towers may lose their ability to communicate with the broader network, effectively isolating them.
  5. **Loss of Centralized Control:** Cellular networks are managed through centralized systems that route traffic and manage connections. If these systems are disrupted—due to power loss, physical damage, or cyber-attacks—the entire network can fail, even if individual towers remain operational.

### **The Immediate Aftermath of a Disaster**

In the immediate aftermath of a natural disaster, several things typically happen to cellular service:

1. **Service Disruptions:** Cellular service may be completely or partially disrupted depending on the extent of the damage. This can result in dropped calls, slow or unavailable data services, and difficulty sending or receiving texts.
2. **Network Congestion:** Even if the network remains operational, the sudden surge in usage can cause severe congestion. This can make it difficult to get a call through or result in slower data speeds as the network struggles to handle the increased demand.
3. **Prioritization of Emergency Services:** In many cases, cellular networks may implement a priority system where emergency services and first responders receive priority access to the network. This can further limit access for the general public.
4. **Temporary Solutions:** In some instances, mobile network operators may deploy temporary solutions such as portable cell towers (also known as “cell on wheels” or COWs) to restore service in affected areas. These are particularly common in areas where the infrastructure has been severely damaged.

### **Long-Term Impacts**

The long-term impacts on cellular service depend on the severity of the disaster and the effectiveness of the recovery efforts:

1. **Extended Outages:** In cases of widespread damage, cellular service may be down for days, weeks, or even months. This is especially true in remote or hard-to-reach areas where repair efforts are challenging.
2. **Restoration Efforts:** Restoration of cellular service often begins with emergency repairs to restore power and reconnect severed cables. However, rebuilding damaged towers and infrastructure can take time,

especially if the disaster has impacted a large area or if resources are limited.

3. **Improved Infrastructure:** In some cases, the recovery process may lead to the installation of more resilient infrastructure. For example, new towers may be built to withstand higher wind speeds, or backup power systems may be upgraded to last longer.

## **How to Prepare**

Given the potential for cellular service disruptions during a natural disaster, it's important to be prepared:

1. **Have Backup Communication Methods:** Consider alternative communication methods such as satellite phones, two-way radios, or amateur radio. These systems are often more resilient during disasters.
2. **Emergency Communication Plans:** Develop an emergency communication plan with your family and loved ones. This could include predetermined meeting points or using text messaging instead of voice calls, as texts require less bandwidth and are more likely to go through during congestion.
3. **Keep Devices Charged:** In the lead-up to a potential disaster, ensure that all mobile devices are fully charged, and have backup power sources such as portable chargers or solar chargers available.
4. **Utilize Emergency Alerts:** Ensure that your mobile device is set up to receive emergency alerts, which can provide critical information even if regular communication channels are compromised.
5. **Download Offline Maps and Resources:** Before a disaster strikes, download maps, contact information, and other critical resources that you may need in the event that cellular data is unavailable.

## **The Role of Public and Private Sectors**

Both the public and private sectors have roles to play in ensuring that cellular networks are resilient to natural disasters:

1. **Regulatory Standards:** Governments can implement and enforce standards for disaster preparedness, requiring cellular providers to have robust backup systems and contingency plans.
2. **Investment in Infrastructure:** Mobile network operators can invest in more resilient infrastructure, such as towers designed to withstand extreme weather or backup systems that can operate for extended periods.
3. **Collaboration with Emergency Services:** Cellular providers can collaborate with emergency services to prioritize and maintain communication channels during and after disasters, ensuring that critical communications remain operational.
4. **Public Education Campaigns:** Governments and cellular providers can also engage in public education campaigns to inform the public about what to expect during a disaster and how to prepare for potential communication outages.

## **Final Thoughts**

Natural disasters pose significant challenges to cellular networks, often leading to service disruptions at a time when communication is most critical. Understanding the vulnerabilities of these networks and the potential impacts of disasters can help individuals, communities, and organizations better prepare for these events. By taking proactive steps—such as having backup communication methods and

creating emergency plans—everyone can be better equipped to stay connected during and after a disaster.

## Stay Informed & Get Connected

For the latest updates on community safety, crime prevention tips, and local events, we encourage you to visit the Tipton Constables Facebook page. Stay informed about the efforts of our dedicated law enforcement officers as they work tirelessly to keep our community safe. By following the page, you'll gain access to valuable information, timely alerts, and opportunities to engage with your local constables. Join the Tipton Constables Facebook community today and be an active participant in fostering a safer, more connected neighborhood. Your involvement makes a difference!

[Constable's Blog](#)

[CERT Team Website](#)

## Emergency Communications Class

The Emergency Communications class emphasizes the importance of being prepared for communication breakdowns during emergencies. The key points include the need for simple, replicable communication kits that can be used by individuals or groups to maintain contact when traditional systems fail. The use of ham radios can work for this purpose by programming radios with specific frequencies and creating a clear communication plan for emergencies.

### **Importance of Preparedness**

The class stresses that during an emergency, chaos is inevitable. This chaos can be compounded by injuries, infrastructure damage, and communication failures. Preparing in advance by creating a simple, easy-to-use communication kit ensures that even under stress, individuals can maintain contact with loved ones and coordinate effectively. The kit discussed includes a basic ham radio, such as the Baofeng UV-3R, which can be charged via USB, making it versatile for emergency situations.

### **Creating and Using a Communication Kit**

Programming all radios in a group with the same frequencies can facilitate communication. A key component of this kit is a card that provides clear instructions on how to establish communication. The idea is to have a simple, standardized procedure that everyone can follow, even under duress.

CERT teams should practice with the kit in mock disaster scenarios to ensure that everyone is familiar with how to use the equipment. Regular practice ensures that, in the event of a real disaster, individuals can quickly and effectively establish communication.

### **Advanced Communication Strategies**

In CERT, we focus on basic communication strategies, but there are more advanced options like Automatic Packet Reporting System (APRS) for location

tracking. The emphasis for the team is ensuring that the basics are covered—having a reliable communication kit and a plan in place.

### **Practical Application**

CERT members are encouraged to share the knowledge and tools discussed with neighbors and community members -- perhaps in your neighborhood watch group. By creating kits and conducting group drills, communities can increase their resilience in the face of disasters. The ultimate goal is to ensure that everyone has the ability to communicate and coordinate during emergencies, thereby improving overall safety and response effectiveness.

### **What Happens After the Disaster?**

The critical period from the first day to the tenth day following a disaster. This period is often marked by the breakdown of traditional communication systems, making it essential to have alternative methods in place. The video emphasizes a layered communication approach using various radio types, including AM/FM, FRS, VHF/UHF, and HF radios, to maintain contact, gather information, and coordinate help during extended outages of power and other essential services.

### **Importance of Layered Communication**

During the aftermath of a disaster, communication is crucial, not only for personal safety but also for coordinating relief efforts. Using different types of radios, each serving a specific purpose creates a layered effect for fault tolerance purposes. For example, AM/FM radios are recommended for monitoring government emergency broadcasts, providing critical updates on the situation. These broadcasts can inform you when it's safe to venture outside and what precautions to take, depending on the nature of the disaster.

FRS (Family Radio Service) radios are useful because of their simplicity and accessibility. They can be used to communicate with neighbors or family members over VERY short distances, helping to assess the needs within a local area. The video stresses the importance of pre-establishing communication protocols with your community, such as which channels to use and when to check in.

For more strategic communication, especially when seeking assistance from emergency services or coordinating with wider networks, VHF/UHF radios are invaluable. These radios offer greater range and can connect you with local disaster nets, often run by amateur radio operators who volunteer to assist during emergencies.

### **Advanced Communication and Monitoring**

Amateur radio operators have HF (High Frequency) radios, which can communicate over long distances, making them useful for reaching out beyond the immediate disaster zone. This capability is particularly important in widespread disasters where local infrastructure is heavily damaged, and external assistance is needed.

The effective use of these radios requires more than just owning them; it requires practice and familiarity with their operation -- and a license! Participation in regular drills and in local emergency communication nets will help to build these skills.

### **Community Coordination and Support**

It's important for CERT teams to engage within their community by taking proactive steps to involve their neighbors in disaster preparedness. By obtaining



radios, establishing common channels, and holding regular drills, communities can enhance their resilience and ability to respond to emergencies effectively.

In addition, the use of waterproof notebooks like "Rite in the Rain" can be useful to keep track of important information during a disaster. This can include notes on the status of neighbors, essential frequencies, and other critical data that might be needed over the course of the response.

### **Practical Considerations and Preparedness**

Finally, power sustainability, such as using generators, battery packs, and solar power is essential to keep communication equipment operational during prolonged outages. Think ahead about the power requirements of their communication devices and how they will keep them running when the grid is down.

### **Conclusion**

Effective emergency communication is not just about having the right tools; it's about being prepared and practiced in their use. The first part of this article lays a strong foundation by emphasizing the importance of a well-thought-out communication plan and the use of simple, reliable equipment. This article can serve as a valuable resource for anyone looking to improve their emergency preparedness, particularly in the realm of communication.

It's important to be prepared for the communication challenges that arise after a disaster. By using a layered approach that incorporates different types of radios and establishing clear communication protocols within the community, individuals can significantly improve their ability to stay informed, coordinate with others, and access help during the critical days following a disaster.

This approach not only enhances personal and family safety but also contributes to the overall resilience of the community, ensuring that everyone is better equipped to handle the aftermath of a natural or man-made disaster. By following the guidance provided, individuals and communities can better navigate the chaos that often accompanies natural disasters and other emergencies.

