

# Self Evaluation Primer of Disaster Communications Using Internet and Cellular Telephone Services

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The basic text of this document was an Internet message written and sent by James R. "Ric" Sohl, in March 1997. It was written primarily for USAF Auxiliary - Civil Air Patrol and for Amateur (Ham) radio emergency service personnel, but it relates to any disaster relief agency.

The idea came during a Ham radio club meeting where the reliance of Cellular telephone service and the Internet during disaster events was discussed. A concern that government and private sector agencies that provide disaster support were beginning to rely more on Cellular and Internet services, could create problems during actual disaster events.

This is because the main training and evaluation program for disaster relief training and planning is simulated disaster events. Most of these do not provide a realistic situation regarding a major event and the loss of a large percentage of public communications services.

This "**Internet / Cellular Communications Exercise**"; is designed as a *self evaluation for any disaster relief agency*. Be honest, you only hurt yourself, and your agency, by not doing a true evaluation.

Even though the event is directed toward Civil Air Patrol and Amateur radio staff, it can be used by any agency or group.

It does assume some factors, that do not relate to the general public. Most disaster relief agencies have trained members, who are better prepared to deal with a disaster event. Therefore the following is assumed:

Each member

1. has received **training in disaster relief**, including:
2. **First Aid training**,
3. **Survival training** at least to a basic level,
4. Expects to travel (and possibly has travelled) **to a disaster event**, and,
5. Is prepared to perform some duty to **provide relief / support** to the event at hand.
6. Understands that disaster relief work is **hazardous and dangerous**.
7. Understands that communications between the disaster area and surrounding areas **is required**.
8. Understands that communications are also required **within the disaster area**.
9. Understands that these communications provide a vital link to **coordinate support and prevent loss of life**, and
10. Understands that the **efficiency and safety** of ones staff is greatly improved with good reliable communications.

11. Is somewhat aware that a disaster can occur in your **own home city** and,
12. Has made prior plans to have a "**Disaster Kit**" readily available to provide for necessary **Equipment and personal gear** for a **72 hour (or longer)** time period.

The scenario for this simulation, was based on my experience for more than thirty years in disaster / relief ground and air support missions. *The [training records](#) are noted at the end of this document.*

I know that some Civil Air Patrol (CAP) members, and amateurs are thinking that our radio networks are outdated, in particular our High Frequency long range networks. This is not limited to CAP and amateur radio, as many key staff people in many agencies / departments, feel the same way. Because of that, I have created the following:

Here is a little **Internet / Cellular phone communications exercise**.

**Your community has just been hit by a disaster. The following conditions now exist.**

1. **No commercial power** will be available for 72 hours. 60% of the power lines are down.
2. **60% of all radio towers** are out of service for 72 hours, at a 45 degree angle to your city from South to North. (Odessa, TX watch out, your trunking system just died, totally)
3. **Land line telephone service is lost to 60% of the community.** (This occurred at Alpine, TX, and occurs many weeknights between Midland and Odessa, TX)
4. **Cellular telephone service is overloaded**, and it takes two hours to get a line, and you may only use the service for 3 minutes. (This occurred at Alpine, TX and occurs often in larger cities)
5. **All city and county radio networks are reduced by 80%** (this figure is real for most trunking networks unless very well planned. I based this one on Odessa Tx. and the locations of their towers)
6. **60% of the broadcast stations (radio and television) are off the air** (see item 2.)
7. The **Cable TV** system and **satellite TV** services are completely out of service. (see item 1.)
8. All Internet service providers are **out of service** (see item 1, 3, and 4, this is not a joke.)
9. **25 % of your fire department and police department equipment is destroyed.**
10. **No gasoline is available from any underground tanks, and the local government has taken over all overhead fuel storage tanks for government use.** If you can show them that your use will support the recovery effort you may be able to get a small amount of fuel.
11. You have planned ahead (right) and have an **emergency gasoline powered generator to power your radio equipment**, your generator uses .7 gallons per hour of operation, how much fuel do you have on hand (this may include your automobiles fuel tanks if you have a way to get the fuel out) you have \_\_\_\_\_ gallons of fuel, and can operate your generator for \_\_\_\_\_ hours. If you use your automobile to charge your batteries, remember the fuel consumption will be MUCH higher.
12. **Do you have food for 72 hours for all members of you household?** Note an MRE will feed two average people per meal. (1200 Calories each, and they are a lot better than C and K rations)

13. You do have **five or ten gallons of drinking water** don't you? In Odessa everyone has some bottled water, but what if tomorrow was your day to get fresh water?
14. **Do you have a way to keep warm during cold weather**, bed rolls, blankets, fireplace (for cooking as well. You did plan for this right?)
15. If we lost 60% of the radio towers **we also lost a great deal of homes and many would require shelter**. Can your community provide 60% of its population with emergency shelter. Your camping gear will come in handy now, if it did not get destroyed with the house.

A disaster noted above is a rare occasion, or is it? Check out recent tornado activity in the Central US and check out the state of Washington in the last two years. Much of what I described has occurred to many communities during the last two years.

Is your community, and are YOU, prepared? Not just to survive but can you help your community or the community 40 miles away? Do you have emergency radio's, both local (FM, 26.620) and HF? Do you have spare/portable antennas, tools, food, water, ect?

**Civil Air Patrol and Amateur (ham) radio communications are a life saver.** These may be the only communications available to contact the Outside world for Help and to take over the load for the local networks.

When Alpine Texas was hit by an earthquake and a year or two later, by a severe storm, the land line and cellular telephone systems were total useless (overloaded). CAP and Amateur radio became the primary communications link to the outside world for the first few hours. Most of Alpine people were not even aware that we where out of communications, or why.

Of note, most smaller areas are fed by fiber optic cable for long distance service. This cable goes back to a main switch, usually located in another area. One time I saw no long distance service available for two hours. You could not call outside of the Alpine, TX area. Not Ft Davis nor Marfa, nor Ft Stockton. Everything in this area is switched through Midland.

Granted if the need came up, the phone company should be able to rig up something in a few hours that should allow some communications outside the area. But how much communications can you provide with only a few lines available? Ten outside lines (if your lucky) to the more than 3,000 local phones. Your going to have problems **calling the hospital**, much less someone outside the area.

During a disaster all conventional communications circuits will become overloaded and additional networks must be put into service to provide the needed communications to help your community get support and aid from outside as well as provide additional communications capacity to fill in between **hospitals, Emergency Operations Center, supporting local government communications needs (Radio Amateur Civil Emergency Service RACES) health and welfare (Amateur Radio Emergency Service ARES), emergency shelters, disaster support agencies (Red Cross, Salvation Army) and providing local radio and television broadcast stations with emergency information for the public.**

The communication requirements will vary and will be needed everywhere, as the event proceeds and outside support becomes available, the needs will change and may decrease.

**All amateurs, both local, and from the surrounding areas** will be needed to provide the mail communications support role. Local and long range networks will be required. After the initial support is put into place, the Ham radio networks will begin to handle "health and welfare" messages with the outside world and between shelters, hospitals, ect.

All Civil Air Patrol units and members will be needed to provide many forms of emergency services, your local CAP network can provide additional communications to support local needs, as well as providing communications for your units non-communications disaster response / support.

Read this message, close your eyes, and imagine that it just occurred. Your radio tower (if you have one; many CAP members only use a portable radio) came down, your home lost 40% of its roof. You can put up a 20 foot pole for an emergency antenna support.

1. Do you have **any** emergency power?
2. Do you have a **30 watt or higher power** mobile unit installed in your automobile? If this unit was not used in the last 7 days, count it as out of service.
3. Do you have **1 gallon (1/2 gallon during cold season)** of drinking water per day per person for your home?
4. Would you need to go to a store to purchase (they will all be out of everything in one hour) **food, water, batteries, gasoline (none available) bed rolls, parts for replacement antenna's?** If you answered yes to any part of item 4, you need to go to the store right now and get prepared.
5. If you are using **any** portable radio (this includes cell phones) that transmits, do you have an **alkaline battery pack (with spare batteries?)** If not count out your use of this radio after **four hours** of use. If the rechargeable battery was not charged in the last 72 hours count that battery pack as **out of service**. If you have not used that portable radio in the last 7 days, count it **out of service**.
6. Do you have (yourself or in your unit) an HF radio, including portable antenna and emergency power source, that was operated in the last 7 days? If not your HF system can not be counted on when you need it. You do not have time to fix it now. (This only applies to Amateur and CAP staff. )

I hope that I have made you think about what it can be like during a disaster situation. I have seen some units that only use their radios when on a mission and worst of all some units have no HF capability at all. (This only applies to Amateur and CAP staff. )

During the last three years I have called on local Texas CAP repeaters and stated "*This is a simulated emergency radio communications test, I need a CAP station to answer my call to test your capability to provide emergency communications on this repeater. Is there any station available?*" More than 50% of the time I have failed to receive an answer. What would happen if a CAP member was in an automobile accident, with a CAP radio who tried using your repeater? (This only applies to Amateur and CAP staff. )

During a disaster your repeater may fail, can your unit still provide support communications without the repeater? (EVERYBODY , do your radios have "talk around"? If not, your out!)

Internet, E-Mail, facsimile, cellular and land line telephones have made our daily communications simple, easy and very handy to conduct our business. However, during a disaster all of these services will be overloaded, or not useable. They can not be relied upon for a true disaster event. During a disaster some of these may work, and if they do, that will make things easier, but you can not depend on that until it happens.

The thing that scares me is that many local governments, disaster support agencies, and even CAP units and members are relying on *non tactical* communications and are not maintaining their local and long range radio communications capabilities or relationships with RACES and ARES.

You should use your all of your radios at least once every week. Check into a local and HF net each week, and your station will work when the need arises. Do not forget to pack up those emergency back up portable antenna (including coaxial cables, ropes, anchors, ect) systems for each band.

If your unit does not have two (one should be yours) High Frequency radio systems, that can operate on 4 MHz and 7 MHz, with at least the capability to operate mobile, then, **shame on you and your unit**. You're not fully prepared. (This only applies to Amateur and CAP staff. )

I am open to any comments or ideas that you may wish to pass on. This document may be re-printed as long as the original source and author are noted. I would like notice of any publication that uses this material, but prior notification is not required unless you make changes in it. If you wish to change or edit it, please send your changes for approval by E-Mail. I have no problems with improvements as long as I have a copy for my records.

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