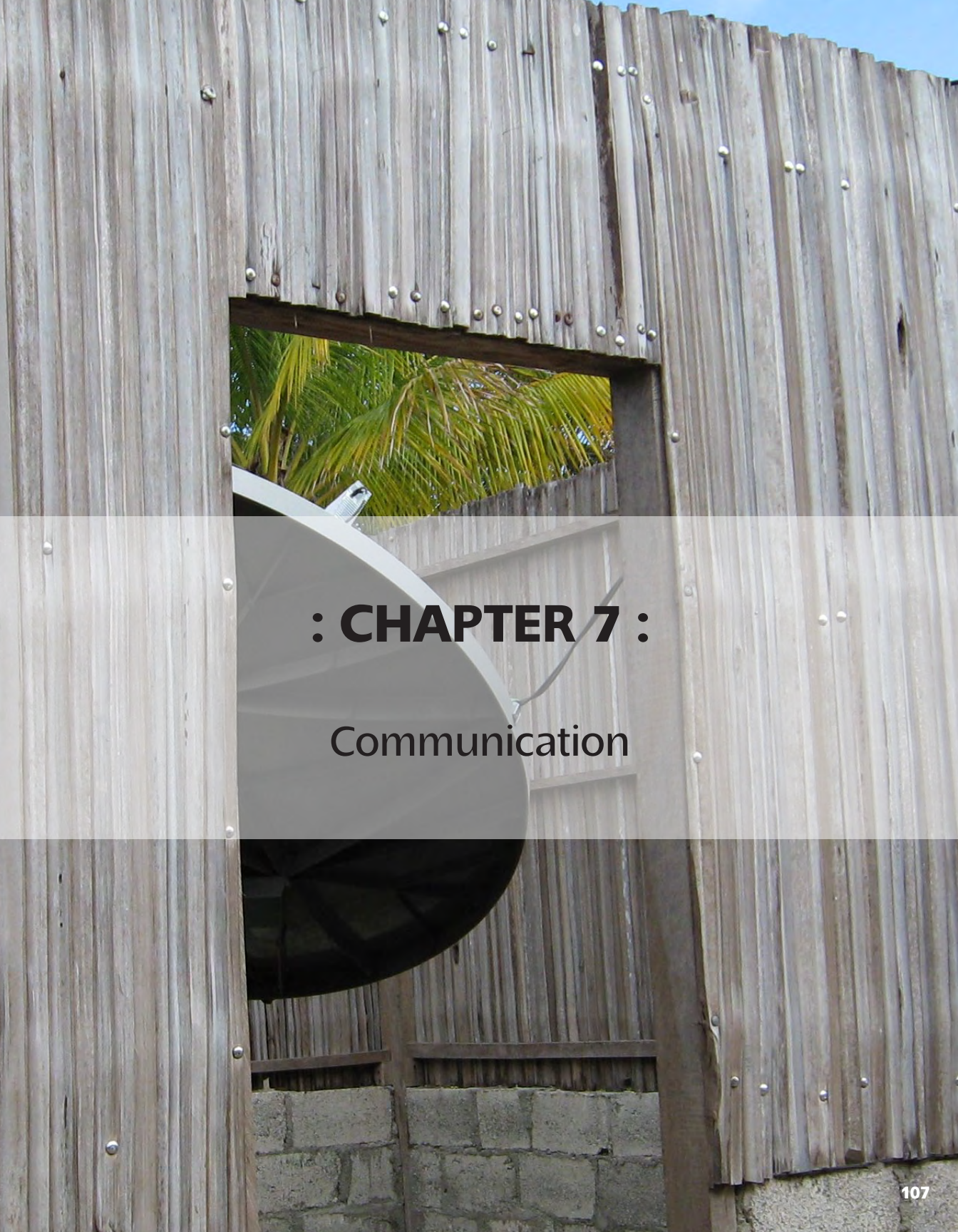


: CHAPTER 7 :

Communication

: NOTES :

Communication

Communication is considered a key concept for security management on various levels: communication within the field team; communication within NGO and partner networks on the ground for the collection and analysis of information related to security; between the country program (CR or delegate) and regional management (RD, RTA, DRD-MQ) and HQ (OSD, Director- Staff Safety and Security).

Some basic guidance for internal communication on security includes:

- All security incidents must be reported to the Country Representative. All staff should be aware of any changes in the operating environment that may indicate a shift in security risks to CRS and should communicate to their supervisor any concerns or observations that might have an impact on the safety of CRS staff, partners, or indicate a threat to assets or operations. See Appendices for CRS' standard Safety and Security Incident Format.
- Security events that are significant enough to make international news headlines warrant a brief communication from the country program to the region and HQ addressing the following:
  - Safety of CRS staff and dependents.
  - Potential impact of the security event on CRS operations, if any.
  - If the event signals a potential risk to CRS in any way, how CRS standard operating procedures will be modified to address the risk.
  - Statements, concerns, analysis or requests, if any, from Church or other partners as a result of the event.
  - If the event(s) have prompted an increase in Security Level, identify indicators, or triggers, which would prompt the return to the lower Security Level.
- The more tense the security environment, the more frequent communications between the CR, RD, and HQ should be. Depending on the nature of the situation, updates can take the form of daily, bi-weekly, or weekly written security updates, or could be daily or weekly phone calls.
- In more volatile operating environments, make use of Security Levels and triggers to communicate the gravity of the situation, operational policies and procedures being put into place, and what indicators in the local environment will indicate a return to a more "normal" security management posture.

For example, CRS/Sudan - Juba office recently increased the Security Level from 2 to 3 as a result of a number of armed break-ins on INGO compounds, without effective response from local authorities. They communicated the following indicators that would trigger a return to Level 2:

CRS staff in Juba have set the following benchmarks to allow for the return of non-essential staff to Juba. They include:

- A two week period with no incidents.
- Effective and appropriate steps taken by the Host authorities to prevent such attacks (an increase in patrols, provision of armed guards outside NGO compounds).
- Upgrading of the security measures in the CRS compounds including but not limited to:
  - Strengthening of gates of the office (completed).
  - Improved fencing of the compounds.
  - Strengthening of the security doors in the office.

See Chapter 13 Appendices for CRS/Juba's full situation report.

The importance of effective communication in the field can never be understated. In terms of security, effective and reliable communication systems can allow the immediate flow of critical information and facilitate rapid responses. It must also be noted that while most modern communication platforms are useful in their own right, they are all susceptible to failure and must not be relied upon in their singular entirety.

Environmental terrain, weather conditions, local security situations and even solar flares from the sun can adversely affect all modern forms of communications. Field staff who become complacent in the use of one means of communication, without adequately training or being familiar in the use or an alternative or "backup" means of communication do so at their peril. Training and familiarity with a wide range of in-service communication equipment, combined with thorough planning can provide a solid lifeline for all field staff working in difficult environments.

Regardless of the scope and nature of work undertaken in the field, there are **several basic principles** that must be adhered to in order for field communications to be effective and secure. It is also important to understand the vulnerabilities of modern communications, especially considering specific regions field staff are working in, as well as current local political and security sensitivities.

Basic Principles For Transmitting Communications

- All CRS staff should be briefed and trained on all the field program's means of communication. All CRS staff should become competent and proficient at operating all in-service communication platforms as it is likely that will be required to operate such means of communication on a daily basis.
- All modern communications are vulnerable to detection, surveillance, and interception. All field staff must assume that their location is known by, and their conversation is being listened to, by a 3rd party regardless of whatever region of the world they are working in.
- Using communication equipment in conflict areas has a strategic significance, and all field staff must be aware that access and ownership of all forms of modern communication in such areas must be used with discretion.
- When using field communications, CRS Staff should never speak "clearly" on sensitive topics such as military movements, sightings or cash movements. Individuals, places and destinations should not be referred to by their true names. CRS staff should use nicknames for people and places especially when using VHF and HF radios.
- When in transit, regular scheduled communication checks should be made in line with estimated travel times upon reaching designated points along the route. This is to ensure that the party in transit is in constant communication with the field office and their location can ascertained, should a security incident occur or communications are lost on route. A comprehensive communication plan and a no-communication plan should be planned and briefed before any transit is made.
- CRS staff should not use or transmit on other organizations radio frequencies without their permission. It would be in CRS field staff's interests to gain permission to "monitor" other NGO's transmit frequencies in conflict or disaster areas as a useful information gathering frequency for their own situational awareness.
- CRS staff are encouraged to closely monitor who uses their in-country means of communication. **Do not allow unauthorized persons to use your telecommunications equipment.**
- Backup means of communications should exist in all operational environments considered as Security Level III environments, or those at Security Level II which tend to flash to III from time to time.

Telecommunications Equipment Security
These tools are attractive and expensive items. Care must be taken to prevent the loss of telecommunications equipment due to theft. All equipment should be inventoried, secured, and/or used inconspicuously.

COMMUNICATIONS PLATFORMS

TYPES OF RADIOS

High Frequency (HF) Radios (3MHz to 30MHz)

HF radios can transmit much longer distances than most radios as the radio waves are less affected by geographical features such as mountains and terrain. HF radios use the ionosphere to refract radio waves over vast distances. For this reason, HF communications are subject to varying weather and atmospheric conditions.

As the sun affects the ionosphere, the quality of HF radio communications varies during different times of the day. After first installing an HF radio, it is important to test transmissions in the morning, afternoon, evening and at night in order to determine the best time for scheduled radio contacts. These tests should be conducted with different frequencies to determine what frequency at what time is best.

Generally, for ranges up to 800km, use frequencies within the 7 MHz range. For every 160km increase in range above 800km increase the frequency by 1MHz. (e.g.: 800km - 7MHz; 1,120km - 9MHz; 1,600km - 12MHz)

At night, when there are fewer ionized (charged) particles in the ionosphere, lower frequencies may also serve for clearer transmissions. Frequencies within the range of 2-3MH are often best suited for night time communications.

Very High Frequency (VHF) Radios 30 MHz to 300MHz)

VHF radios are probably the most commonly used radios in the world. VHF radios use a line-of-sight method of transmitting radio waves. Subsequently, geographical features such as forests, mountains, and buildings absorb and deflect VHF radio waves which can adversely affect the quality of VHF transmissions. Zones which block VHF waves are known as dead spots. Dead spot/line-of-sight problems can be mitigated by increasing the size of the antenna or moving your location to higher ground to transmit and receive. Overhead wires and pylons do distort VHF waves. If you have poor quality transmission, move away from them until the transmission is audible.

Ultra High Frequency (UHF) Radios (300MHz to 3000MHz)

UHF radios are very similar to VHF radios as the radio waves acts in a similar fashion to that of VHF radios. UHF radios are sometimes referred to as (Citizen's Band) CB radios.

INSTALLING RADIOS

Antennas

Selecting a place to erect an antenna is critical for successful communications.

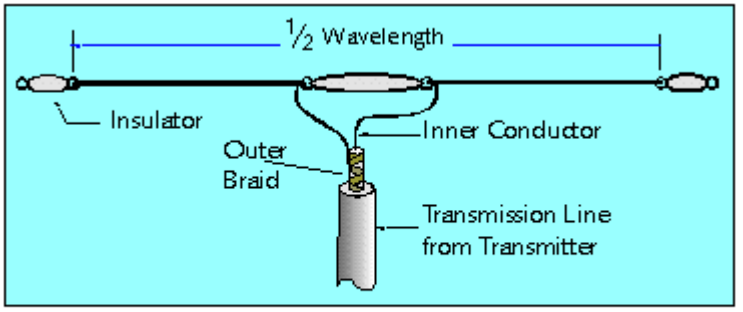
- The antenna should be **located as high as possible**, preferably on the roof of a several story building away from other buildings if possible.
- If the building is occupied by other organizations, **try to install the antenna as far away as possible from other antennas**. If this cannot be avoided, place your antenna in parallel lines with the other antennas.
- If the office is located in a house, with only one floor, examine the possibility of suspending the antenna from trees or any other existing structure in the compound.

Types of Antennas
A dipole multi-frequency antenna (Barker & Williamson or Codan) allows transmissions on all frequencies between 2 and 30MHz. These antennas are approximately 22 meters (72 feet) in length, however it is important to note that different frequencies (depending on what radio is being used) will transmit better with different lengths of antenna. When changing from one radio to another, it is important to remember you may have to change the length of the antenna according to the frequency.

To calculate the antenna length for an allocated frequency, use the following equation as a rough guide: **468** / (the frequency in MHz). The answer is in Feet. Example: if Frequency = 5MHz. Ð 468 / 5 = 93 Feet (28 meters) of antenna. This formula should only be used as a guide when installing and erecting an antenna for the first time.

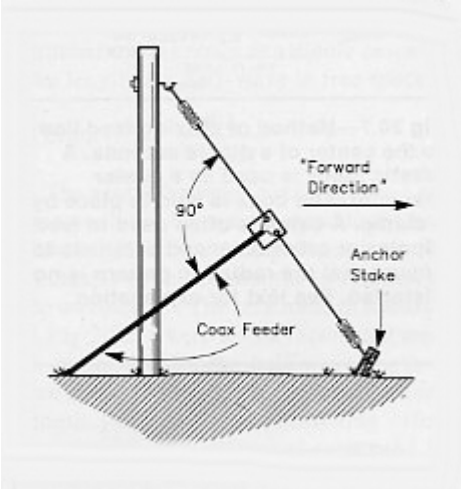
There are generally 3 agreed types of antennas. See attached graphics for depictions of three antenna types.

The Horizontal Antenna.
This antenna is suspended between two parallel points approximately 8m above the ground (Minimum height) and is designed to transmit radio signals at right angles to the two points.

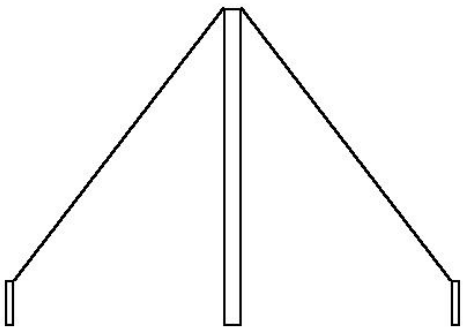


dipole antenna

The Sloping Antenna
This antenna is designed for HF communications as it directs the radio waves directly into the ionosphere.



The Inverted "V" Antenna.
This antenna is useful for VHF communications as it transmits omni-directional radio signals.



THE RADIO ROOM
The radio room is the central hub of all communications. It should be kept clean and neat and swept and carefully dusted on a daily basis to prevent dust from building up on and within the radios. When not in use cover sensitive parts to protect from dust.

Setting Up and **Maintaining** the **Radio Room:** it is important to consider the following:

- Keep instruction to use all equipment in the radio room for quick reference.
- Multiple electric power sockets should be available and accessible.
- Away or isolated from outside noises and disturbances.
- Located out of hearing and sight to any visitors.
- Be within 25-30 meters of the antenna.
- Contain adequate chairs and tables for essential staff to co-ordinate emergency responses.
- The transceivers are grounded via electric wire (minimum 4 mm thick) to an iron ground stake that is disconnected when there is an electrical storm or lightening strikes.
- The radios ventilation apertures are free from obstruction.

- All connections to the radio and antenna are secure.
- Adequate power is able to supply the radios, to ensure they transmit at full strength.
- Have a back up power supply (batteries or generator) to power all communication equipment should the local power fail.
- Have an allocated staff member/s who monitor all transmissions 24/7.
- Base station operators keep a written log of all radio transmissions received and sent.

Power Supplies
Most radios work on DC 12 volt power sources that can be supplied by a car battery. Most car batteries can be charged through different means such as Main Power, generators, and solar panels. Most transceivers can also be plugged into 220V mains powers using an inverter (220V AC/12V DC).

Batteries
When using "zinc-lead" type car batteries which contain a mixture of water/acid, it is necessary to add water from time to time in order to maintain the battery's fluid level approximately 1cm above the lead plates. Refill only with distilled or pure rain water.

Charging
Ensure that the battery is plugged into a charger. A 10AH charger will take approximately 8 hours to charge an 80 AH battery that will discharge in 4 hours using a 20 AMP transceiver. This means that charging time must equilibrate the discharge. In order to **preserve the life of a battery, avoid discharging it more than 30% each day**.

Solar Panels In equatorial regions the solar panel should be mounted almost flat. Be aware that rain will clean the surface of the panel but there must be at least a 15 degree slope to allow for water run off. Panels installed north of the equator should slope southward, and panels installed south of the equator should slope northward. The panel should have uninterrupted exposure to the sun, especially from 9 a.m. to 3 p.m. To achieve this, the angle of the panel's slope should roughly equal the degree of latitude. (i.e. the further the distance from the equator, the steeper the angle of the solar panel) Finally, ensure that the solar panels are checked regularly, and that they are clean and free from shade.

BASIC RADIO TECHNIQUES AND PROCEDURES
- **Discipline** - Listen before transmitting.
- **Brevity** - Be brief and to the point.
- **Rhythm** - Use short, complete phrases that make sense.
- **Speed** - Do not speak too fast or to slowly.
- **Volume** - Do not shout.
- **Preparation** - Plan what you are going to say before transmitting. Write it down before hand.

Transmitting
Before transmitting:
- Verify the radio is set to the appropriate channel or the correct frequency.
- Assume others will be listening to your transmission.
- Wait for a break of at least 5 seconds in between communications, to ensure you are not interfering with existing communications.
- Press the PPT (Push To Talk) button first, then speak your message.
- Ensure the microphone is approximately 5 cm from your mouth.

- Release the PPT button when you have finished speaking.

Remember: Radios by themselves will not increase your security, but their proper use will.

Radio Procedure Words (Prowords)
A proword is a word of a phrase that has been given a certain meaning in order to standardize and speed up the handling of messages. See Chapter 13 Appendices for the International Phonetic Alphabet, recommended prowords, and other transmission tips.

Radio Checks
It is important to carry out periodical radio checks when in transit or in the field, and all CRS field staff should make a habit of conducting regular and random radio checks with each other and with the field office. The universal reply to a requested radio check is to respond with an assessment of Volume and Clarity. This is sometimes achieved by assigning a number rating of 1 to 5 for each of these variables.

For example, perfect communication between two parties will often result in the request for a radio check to be met with the reply of **"Loud and Clear"** (**5 by 5).**

As a multitude of variables can effect radio communications, some transmissions may be heard very faintly, or very loudly but with lots of background distortion. Common replies to such radio checks can be replied as, **"Weak but Readable" (2 by 3)** or **"Loud and Distorted" (5 by 2).**

Such replies will give the requesting party an indication of how their transmissions are being received and what they should do to improve their transmissions.

Bear in mind that the radio is not a secure means of communication since it can be monitored by practically anyone. Never transmit military-specific, security-related information via the radio. Inform briefly about the situation if it affects your mission, such as "Team Halted", "Team allowed to proceed", "Team Returning", or "Team needs assistance".

MOBILE TELEPHONES
Mobile telephones rely on the distribution and interconnection of a number of transmitter/receiver (cell site) sites which in turn are connected to a telephone network. Each cell site has a limited range in which mobile phone service is available. Outside the range of the cell site, mobile phone service is obviously not possible. Cell sites are generally clustered around populated areas. However, in developing countries, service may not be available in rural areas.

Due to the popularity of mobile phones, they are now almost common place in almost every part of the world. Whilst they are possibly the most convenient method of communication, mobile phone networks are still vulnerable to network congestion, natural disasters, government monitoring and eavesdropping as well as being subject to complete shutdown in times of political instability and security situations. Subsequently, all field staff should be familiar with one or more methods of communication should the local cellular network fail or be shut down by host governments. Mobile telephone technology has developed to a point that service providers can be instructed to remotely install software allowing third parties to track locations of individuals or tap into phone conversations. Thus, field staff should remove the batteries from their mobile phones when discussing sensitive topics within host countries.

SATELLITE COMMUNICATIONS

Satellite communication is possibly one of the most effective and reliable forms of communication. There are many different types of satellite communication equipment available, however the most common devices are Thuraya satellite phones, Iridium satellite phones, Mini-M satellite phones, VSAT's, the Broadband Global Area Network (BGAN) and Global Positioning Systems.

The BGAN system which is provided by Inmarsat is a satellite-based internet provider that enables the user to connect to the internet almost anywhere in the world.

GPS systems use a satellite global positioning system that receives signals from a number of orbiting satellites, allowing the user to determine their exact location, speed, elevation and direction.

A fundamental issue with satellite communications is that there must be a clear line of sight with an orbiting satellite in order to create an up-link. If using external antennas placed outside, then most satellite phones can be used indoors provided that the antenna has a clear view of the sky.

All satellite communications have advantages and disadvantages depending on the need as well as the country and region in which they are being used in. Field staff should be aware that certain countries forbid the possession and use of satellite communications, and field staff should be aware of the footprint satellite communication devices create should they decide to use that medium of communication.

VSAT

A Very Small Aperture Terminal (VSAT), is a two-way satellite ground station with a dish antenna that is smaller than 3 meters. VSAT data rates typically range from narrowband up to 4 Mbit/s. VSATs access satellites in geosynchronous orbit to relay data from small remote earth stations (terminals) to other terminals or to master earth station hubs.

VSATs should be used when:

- mobility is not a requirement.
- the office has more than five users.
- the business activity or program is expected to last more than six months.
- there is competent IT support for installation and maintenance.
- the recurring fees are to be minimized even if the initial equipment investment is high.
- there is a need for substantial, continuous data transfer.

Should not be used when:

- the program activity is expected to last a relatively short time (less than six months).
- the need for mobility is high.

Typical cost is:

- Equipment: $4,000.
- Service: $2,000 for 256/128Kbps, 1:4 contention ratio (eg., one typical connection to four users on-line at the same time will provide a reasonable experience) and unlimited data transfer.

BGAN

A Broadband Global Area Network (BGAN) is a type of satellite internet and telephone. The system uses geostationary satellites and as satellite capacity expands will cover all parts of the world except for polar regions.

Downlink speeds are up to 492kb/s and upload speeds slightly lower at 250-400kb/s. The terminals have different capabilities with different costs associated with them. The main two that apply to basic BGAN usage are voice and background data. Voice is on average $0.99 per min. and costs vary based on type of calls are made (Land lines, Cell phones, other Satellite phones); data runs from $5.00-$10.00 per MB depending on the service provider used. The advantage of BGAN over other satellite systems is that the terminal is portable, can be easily set up by anyone, and is the only portable satellite system with high of quality and speed for both voice and data services.

There is a need for the device to remain in view of the satellite to use the network. BGAN is typically used in disaster response, telemedicine, business continuity, military and recreational use.

Should be used when:

- mobility is a requirement.
- the office has less than five users.
- the activity or program lasts for less than 6 months.
- there is no IT support.
- the investment in equipment is to be minimized even if the recurring costs are high.
- Ideal for emergency projects.
- there are VSAT licensing problems (though users should be aware that local governments often require that BGANs be registered).

Should not be used when:

- the activity is to last a long time (more than six months).
- the office has more than five users.
- data transfers are expected to be high.
- mobility is limited.

Typical cost is:

- Equipment: $1,500.
- Service: $450 for a setup with 384/240Kbps, 30min of communication and 100MB data transfer.

Thuraya

Thuraya is similar to BGAN with the advantage of providing cellular phone features. The bandwidth/speed with Thuraya is lower than that of the BGAN (up to 144 Kbps), but the price per megabyte is almost the same.

Field Communications: Standard Operating Procedures

- **Scheduled communication checks.** Whenever traveling in hostile or insecure environments it is essential to have a communication protocol detailing scheduled communication checks with the field office. The purpose of this is threefold. Firstly, it ensures you have constant communications with the field in case of an emergency or an incident. Secondly, it enables the field office to establish communications with all parties informing them of any real-time information that may have recently come to hand which may affect them in transit or at their intended location. Thirdly, an established

communications plan with pre allocated scheduled reporting times and locations assists in locating teams or individuals should a non communication scenario arise.

- **No Communications Procedures.** Situations may arise, such as natural disasters or civil conflict, in which the radio and cell phone networks are not functioning. Satellite communications may still work in these scenarios. For country programs which do not have satellites phones due to the national government's having outlawed them or when satellite phone also could be down, it is imperative for CRS to ensure that all members of the team are safe and sound. It is important to have a plan for how communication will be made with all staff in the situationof the need for a headcount following a disaster (communication tree, Rendezvous point), and what procedures will be if any staff are unable to be accounted for.
- There may be times when traveling or working in the field when communications with the field office or between other field staff are lost, or are temporarily unavailable. This is a critical issue for all field staff as communications are a fundamental life line should a security incident, separation or accident occur.
- By establishing a *basic rendezvous (RV) procedure* that all field staff can follow in the event of a security incident, separation or lost communications scenario, field staff should be able to move to pre determined locations in order to link up with other staff members, or be recovered by security forces without the use of communication platforms.

BASIC RENDEZVOUS (RV) PROCEDURE

Establishing a Basic Rendezvous (RV) Procedure clarifies how all field staff can keep in touch and be informed during a security incident, separation or lost communications scenario. Field staff should be able to move to pre-determined locations in order to link up with other staff members, or be recovered by security forces in the absence of communication platforms.

Pre-determining and choosing RV Locations.

RV locations should be given nicknames that are familiar to all field staff, and their details kept confidential to anyone outside of CRS. They should be located in areas where there is adequate mobile phone reception or located high enough to facilitate radio communications. Ideally, they should have an excellent 360 degree view of the surrounding area, and not be in proximity of any major vehicle traffic or populated areas. Not all RV locations will have these elements, however it is important to note that during the process of choosing RV locations, issues such as safety and security should not be compromised especially on deciding on RV locations which are easy to find. **Most importantly however, RV locations should not be obvious.**

Timings

RV and communication check in timings should be determined by the security officer depending on the local security situation, the current reliability of local communication networks (eg. local mobile phone networks), the capabilities of the in house communication platforms. (eg. HF/VHF Radios), and the distance between field programs and the RV locations.

Pre-Departure Briefing

Before departing for travel, a comprehensive brief should be given by the Security Officer detailing the locations of the relevant pre determined RV locations. The locations should be physically identified to all traveling field staff using a map, regardless of their familiarity to the field staff. Secondary and other alternate RV locations will also be identified by the Security Officer and it is in the interests of all field staff to memorize this information. During this briefing, pre determined communication checks will also be detailed using a map and the means by which the communication checks will be carried out.

Triggers to enact the RV Procedure.
Depending on the security situation and communication capabilities there may be several triggers that will enact the RV procedure. A total loss of all communication may result in a team being forced to return to the field office, or a security incident in the field may result in the loss of a vehicle and force all team members to move by foot to an RV location. All possible worst case scenarios should be thought out in advance by field staff and the Security Officer and relevant planning should take place involving RV locations.

Considerations when the RV procedure is enacted.
- When moving to an RV location on foot, always travel in pairs if possible.
- Upon arriving at the RV, do not locate yourself directly at the RV location, but instead sit approximately 100meters away and observe who may be there in the location before you.

Depending on the local security situation, if there has been no communications with field staff for longer than 2 hours (or time to be determined) all CRS staff should assume the RV procedure has been activated and move immediately to their primary RV location. If they discover the primary RV location is unsafe they are to then move to the secondary RV location and wait to be recovered by security forces, or other CRS-designated response mechanism.

An effective RV procedure is a proven method of moving away from a security incident to a safe location, in order to establish communications or be recovered by local security forces or by other CRS staff.

For the RV procedure to work it is essential that CRS staff take the time to rehearse going through the motions of moving to RV locations when ever possible under simulated conditions.

EXAMPLE

Pre Departure Briefing Format
Situation: Due to escalating violence within the region, a large number of Intentionally Displaced Persons (IDPs) have moved into the Eldoret area. Local youths have also been conducting illegal road blocks between Eldoret and the IDP camps preventing the movement of affected people to the camps.

Task: CRS field staff will travel to Eldoret area in order to conduct assessments and establish future programming activities.

Method: CRS staff will travel by vehicle from the Eldoret office to the IDP camps located to the north of Eldoret.

Administration: Persons traveling in the vehicle are all to be wearing CRS marked clothing. The vehicle is to be marked with CRS stickers, fully fueled, with spare tire and be carrying 5 liters of fresh drinking water. A radio check of the vehicle's radio with the field office radio will be conducted before departure. The driver will inform the field office via vehicle radio when they are departing the field office location.

All CRS staff are to carry a mobile phone each, (set to vibrate), and a small quantity of cash. **RV Locations**: Primary RV is **"MONTANNA"**. 100 meters South of the Tambache bridge, under the large Eucalyptus tree.

Secondary RV is **"CHIGAGO".** 200 meters south of the Moiben Rd and Iten Rd intersection. Alternate RV is **"HOME BASE".** The CRS Field Office in Eldoret.

Communication: Radio checks will be conducted at 20 minute intervals by the driver or co-driver during the vehicle transit. If radio communication with the field office is unable to be established after 20 minutes in transit, a mobile phone call will be made to the field office informing them they are still on route. If radio communication continues to be unsuccessful, CRS staff will continue to check in with the field office via mobile phone.

Any significant observations made on the journey will be relayed to the field office immediately.

During transit and whilst in the field, all CRS staff will monitor their mobile phones service level. If it is discovered that all members mobile phones have no service during transit or upon arriving at the IDP camps, CRS Staff should attempt to relay this information via the vehicle radio to the field office, informing them that the team has no mobile phone communications.

No Communications

During transit: If communications are unable to be established by the vehicle radio and all CRS members mobile phones, they are to turn around and return to the last known location where mobile phone and/or radio communications were established and inform the CRS field office immediately, and await further instructions.

At the IDP camp: If communication is unable to be established with the field office with both the vehicle radio and by all mobile phones, one person is to stay with the vehicle and continue to attempt to establish communications via vehicle radio with the Eldoret field office.

Actions On

- **Break Down**: As Per CRS operating procedures.
- **Road Block:** As per CRS operating procedures.
- **Ambush and Separation** : Escape the ambush if possible. If still in the vehicle attempt to return to the CRS field office in Eldoret. If moving by foot, move to the primary RV location: **MONTANNA**. Upon arriving at the primary RV location, establish communication with the Field Office and follow all instructions. If unable to establish communications, wait in location for security forces to locate you. If unable to move to or stay at the Primary RV **MONTANNA**, move to the Secondary RV **CHICAGO**, wait there and attempt to establish communications with the CRS field office.

The Security officer will ask questions to the field staff at the end of the brief in order to ensure all field staff know the full RV procedure.

See Chapter 13 Appendices for Information Transmission Techniques for Radio Users.