First Regional Workshop on
Emergency Telecommunications
for the Central American and Caribbean Region

ANNEX 4

Port of Spain, Trinidad and Tobago,
4 to 9 November 1996

Trinidad Hilton and Conference Centre 5 November 1996

SOCIAL SCIENCE RESEARCH ON DISASTER WARNINGS:
Previous Research and a Proposed Model for the Future

by
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The problem of effectively warning a threatened population prior to a potentially devastating disaster and achieving an appropriate, life-saving response is ancient. God's warning to Noah about some approaching high water was an early example of a successful warning exercise. Furthermore, the problem is pervasive and goes far beyond disasters into the burgeoning field of risk communication.

Obviously, as this conference indicates, it is a problem with significant technological components. However, it is also a problem with significant social and human communication element. In fact, it can be argued that some of the most serious problems inherent in the warning process involve social and human elements, not technological elements.

A Brief History of Social Science Research on Warnings

There is a rather rich body of research that goes back to the 1950's on human and social response to warning, including the early work of Clifford, 1956; Diggory, 1956; Demerath, 1957; Fritz, 1957; Danzig, 1958; Mack and Baker, 1961; Withey, 1962; Williams, 1962; Moore, 1963; and Drabek, 1969. By 1970 it was felt by most disaster researcher that we knew a great deal about the nature of warning messages, the effect of different sources of credibility, different channels for dissemination, and differential response on the part of the public.

However, the vast bulk of this information was not being utilized or was even not known to federal, state and local officials charged with issuing public warnings. This condition changed during the period of 1970 to 1990. The National Weather Service increasingly utilized social science research on effective warning communication and hired disaster researchers as consultants. In addition, significant new studies of warning were undertaken by scholars such as Perry, Lindell, Mileti, Sorenson, leik, Carter and Rogers.

Major Relevant Research Findings

What have we learned from social science research on warnings? Perhaps the most basic finding is the following: A Warning Message That Is Issued is not Necessarily a Warning Message that is Received, Correctly Interpreted, and/or Correctly Acted Upon. This statement is valid even where the technology allows for 100 percent penetration of the target population. We have come to realize that there basically is nothing about the warning process that differs from the normal human communication process.

In both the warning and normal human communication processes, a source encodes a message which is distributed through some channel to a recipient who decodes the message. They are both attempts to obtain isomorphism of meaning. Furthermore, it is realized that there is nothing about the goals of warning process that differs from the goals of other forms of persuasive communication, such as convincing someone to buy a new automobile, vacation in Trinidad, or quit smoking. In other words, those who are in the warning business, must realize that they are actually in the communication and persuasion business. Basically, warning involves an attempt to get members of the public to behave in a certain fashion and do what those who issue the warning messages believe they should do.

Traditionally, in order to gain compliance with a warning message, i.e., to elicit evacuation, sheltering or appropriate pre-impact activity on the part of the public, the Psychodynamic Persuasion Model has ben utilized. This is a model of persuasion or propaganda that is oriented at individuals and is psychologically based. It has been likened to a "hypodermic needle" model in that the individual receives a "shot" which supposedly has some desired effect upon the person. More specifically, this model argues that a message is distributed to a targeted audience. The content of this message is meant to produce psychological fear and anxiety within the audience. This condition results in psychological imbalance and distress. However, the content of the message also includes information on how to relieve fear and anxiety by proposing a remedy or solution. When this remedy or solution is tried, psychological balance is restored. This approach basically tries to "scare the hell out of your target audience, and has been used in advertising and public information campaigns for decades.

However, what it the process does not work? What if the targeted audience does not purchase the car, vacation in Trinidad, or evacuate low lying coastal areas prior to a hurricane. What does social science tell us about where we should look to find the reasons for this lack of success? Allow us to briefly summarize some basic, established social science principles regarding the phases of forecast, dissemination and confirmation or response.

Forecast - Examples of Source Qualities:

With regard to the influence of the source of the warning upon the success of the warning process, we have a number of observations. We know that official sources tend to be believed more than informal sources; however, informal sources are more believed than mass media. Furthermore, it is known that the amount of time it takes an organization to decide to warn the public, which includes hazard detection, is critical to a successful warning process. In addition, the degree of delay in issuing warnings is influenced by:

1. the extent of contradictory information received by decision-makers;

2. the levels of ambiguity, clarity and completeness of the information;

3. the speed of communication flow;

4. the perceived credibility of the source.

Also, it is known that warnings must not be influenced by concerns with mythical behaviour, such as panic or the fear of dangerous evacuation. Finally, research in the United States has shown that the actual capability and practices at the local community level represent a fragmented, poorly linked and frequently ineffective communication system.

Forecast - Examples of Message Qualities:

In general, it has been observed that t the more specific the warning message, the higher the levels of belief on the part of the public. Also the greater the number of warnings received, the greater the belief on the part of the public in the warning message. However, multiple warning messages must be consistent. Any wagueness in messages will be seized upon by the public in light of the normally bias, i.e., people are generally biased to be believe that they are safe, rather than at risk, and treated in a non-threatening way. Finally, a successful warning message must present information that contradicts all the proposed explanations that may offered by the public that deny the validity of the threat.

Dissemination - Examples of Channel Qualities:

It is known that sirens, by themselves, are an inadequate channel for communicating warning messages. The weakness inherent in a simple siren system is that it conveys no message, just an alert. However, sirens, in combination with tone-alert and/or auto-dial telephones, provide the most effective mechanism for penetrating the public and alerting them to danger under the conditions of rapid onset and/or close proximity. Furthermore, while most warnings are initially received by the public through the mass media, the time of day and day of the week during which the message is transmitted critically effects the effectiveness of the alert. Simply put, an effective warning process is facilitated if the warnings are received at a time of day when people are normally tuned to the media, are free from occupational or formal responsibilities, and are in the presence of their family and friends. Finally, with regard to the warning channel, technological failure is rare and is not the source of most problems in most warning situations.

Confirmation - Examples of Receiver Qualities :

The "Normally Bias" is a critical factor that influences the success of the warning process. Basically, it proposes that the initial response is one of scepticism. on the part of the target audience. This sceptical initial reaction is followed by attempts to confirm the validity of the message. This "confirmation behaviour" involves attempts to check the validity of message through other channels, but most importantly with other people. It is also now realized that there is no "magic bullet" with regard to warning messages, i.e., there is no uniform response on the part of the public to the same message. Among the patterns of variation it has been noted that those with prior experience with the specific disaster agent are more likely to believe the message and accept its action proposals than those without experience, as long as they have not previously received a number of false warnings. In addition, belief in the warning message appears to be positively related to socii-economic status. Furthermore, women are more likely to believe than men, and minorities (Blacks and Hispanics) are less likely to believe officials and take appropriate action. Also, the elderly represent a "social dead spot" in the warning system. The elderly are not only less likely to receive warnings than others, but they are also less likely to take protective actions.

Finally, the importance of the group interaction has been noted in previous research. Specifically, it has been observed that the greater the number of contacts with kin, the greater the number of warnings received. Furthermore, the greater the level of community involvement, the greater the number of warning messages received. Also, perceptions of the immediate physical environment influence warning beliefs, particularly the behaviour of other people.

Social Interaction and Group Influences Upon Warning effectiveness

Traditionally, disaster researchers always have viewed the target population of warnings are being the individual person. Our models and approaches have been based upon getting that person to take appropriate action. However, it has long been recognized that a simple stimulus-response model is inadequate for explaining warning effectiveness, because upon receiving the warning message, people communicate it to others, discuss it, interpret it, and take action -- of fail to take action -- in groups and with other people who strongly influence their response.

For example, the literature on evacuation behaviour is very clear that individual people do not evacuate, families do as a unit. In other words, primary groups, such as family, friends, and associates, strongly influence warning beliefs and protective actions. Also, in most disaster situations, a majority of the public hear of the warning message from other people at least one step removed from official sources.

Perhaps the influence of social interaction and groups is most evident in the actions people take to confirm the validity of the warning message. Research has shown that people attempt to confirm the warning message in the following order of probability and importance:

1. contacting family and friends;

2. personal observations;

3. inadvertent or accidental occurrences;

4. contacting officials and authorities.

Research findings from Japan and the United States confirm the importance of social interaction in warning. Findings from Japan indicate that warnings received through neighbourhood associations resulted in greater than 50 percent compliance with evacuation, while those who heard the message from other sources only evacuated at 36 percent. In the United States studies in Charleston, South Carolina following Hurricane Hugo found that the most important factor influencing the decision of a household to evacuate was whether or not they had discussions with other people about the advisability of evacuation. In addition, people's ties to their neighbourhoods had a profound effect upon whether or not they evacuated after receiving the warning. Those neighbourhoods whose residents had a strong attachment to the neighbourhood or place had an all of none response, i.e. they either all evacuated , or no one did.

The Need for a New Conceptualization

These findings indicate that our traditional, individually-oriented models might need to be updated from an interpersonal model of communication to a mass communication model. such a model see the target audience as a group of interacting individuals, not as isolated individuals. It understands that people receive warning messages through a process that has been called "two-step" or multiple-step" flow, in which the message first goes to key opinion leaders who then pass and interpret the message on to opinion seekers and others.

This notion appears to be rather fatalistic and of little use to those in the warning business because it infers that what happens to the message is out of their control, and that there is little they can do. (For example, officials who issue warnings cannot control the level of place attachment that households have for their neighbourhood).

However, there is an alternative persuasion model that is oriented to this problem. It is called a Sociocultural Persuasion Model. As opposed to the previously noted Psychodynamic Persuasion Model, this approach posits that a warning message is issued. This message attempts to define and redefine what is socially defined as an appropriate response, such as not smoking or evacuating an area. This message results in an effective response through conformity to social norms and group expectations. Consensual validation, i.e., apparent consensus on the part of the target audience about the validity of the warning message, is what is sought as opposed to isomorphism of meaning.

Finally, this perspective means that we should alter our approach in warning by working with neighbourhood groups, work groups, associations, and other collectivities in preparation for warning in a manner that is similar to disaster volunteer training programs.

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NVI
The Disaster Relief Communications Foundation

Near vertical incidence communications:
A promising application for Disaster Communications.

A summary of papers by experts in this mode.

Summary

How do you communicate with several units all around you at about as much as 500KM radius? Not very easily.

VHF radio has a range of 50KM and is in any case limited by the terrain. Unless you have a good repeater system, you won't be able to contact anyone out of sight, HF radio has the problem that there is a large skip zone between the end of the ground wave area 50KM and the first area of skip contact. 500MK. In between there is nothing. Satellites are the answer but you will have to pay costs which are prohibitive to humanitarian agencies, who are always looking to show a serious efforts to use money wisely.

The answer could be Near Vertical mode (NVIS). This, it seems can promise reliable communications in a circle around your station of about 500MK or so, and it is immune from terrain blocking problems, satellite overload problems, infrastructure failure problems and best of all, costs nothing to run apart from the first cost of the very basic equipment, plus some special antennas. Mobile operation is also possible as is both data and speech modems.

In this report we present copies of papers kindly forwarded by Ham radio operations working with the emergency communications services in the USA. Several experiments have been carried out and have shown the mode to be a great success.

Conclusion

The OTH concept has, in fact, "arrived". The concept is not without problems, however. Serious ones include the LCAC's navigation limitations, the LCAC's lack of near real-time intelligence receiving terminals, the shortage of shipboard communications nets available to the landing force, and the poor state of repair of shipboard communications equipment allotted to the landing force.

This study has pointed out that the success of OTH command and control is dependent upon the use of multiple communications paths. The primary path, again, must be HF. The inherent limitations of the UHF SatCom and the VHF frequency spectrums -susceptibility to jamming and LOS restrictions- are overcome through the use of HF. Despite antenna coupling problems, limited assets, and crypto problems, the HF equipment in place today is capable of providing the crucial command and control circuits needed for an OTH assault.

In the analysis of the MEB scenario, we discussed the similarities between an OTH amphibious assault and a conventional assault. In conventional amphibious operations, intelligence gathering prior to the assault requires a means of communicating over the horizon. Also, helicopter borne assaults are routinely conducted beyond LOS communication range. The OTH amphibious assault also requires a communication means for the command and control of initial LCAC sorties.

Technical developments of the near future will significantly enhance the security, survivability, and reliability of communications. State-of-the-art communication systems, such as the DCT and Have Quick II, have already demonstrated a wide range of applicability. Also, the addition of LOS retransmission capabilities will increase the number of OTH circuits available, in all frequency bands. These systems will enhance the OTH command and control effort and further reduce ATF and landing force vulnerabilities.

Finally, it should be noted that the greatest communications limitations in an OTH assault are not the lack of communications paths or the limitations of current technologies, but rather the insufficient and unreliable communication facilities available on amphibious shipping. This limitation has existed for years and has continually plagued conventional amphibious operations to the extent of undermining the commander's confidence in assault phase communications. In addition, the limited availability of LCACs will seriously hamper the mounting of a MEB-size OTH assault until at last 1992.

HF NVIS: Highly Successful Rarely Used

By LtCol Tilden U. Click, USMC(Ret) and 1stLt Mark W. McCadden

The Marine Corps over-the-horizon (OTH) capability, with its widely deploying and fast-moving schemes of maneuver afloat and ashore, has command, control, and communications (C3) planners evaluating new programs that can meet reliable tactical communications requirements. Satellite communications (SatCom) are often established as the primary means of communication to overcome OTH radio transmission ranges, which can extend 50 to 100 nautical miles from landing beaches. Due to the vulnerability and channel limitations of current satellite systems, alternate methods of OTH communications are being pursued as was noted in the article.

"An Alternative for SatCom" (MCG. Mar87)

One alternative for reliably meeting our short-range (0-200 miles) tactical communication requirements, which is neither new nor widely used within the Marine Corps and Navy, is high frequency (HF) near-vertical-incidence skywave (NVIS). The NVIS concept was recently tested by Fleet Marine Force Atlantic (FMFLant) units with excellent results. A basic overview of the test and significant lessons learned are provided within this article, but first an understanding of HF and NVIS communications should be established.

The Infamous Skipzone

There are two principal paths by which HF radio waves travel from a transmitter to a receiver. One is by groundwave where the signal travels directly from the transmitter to the receiver. The other is by skywave where the signal travels up to an atmospheric layer in the sky called the ionosphere and is reflected back to earth. The skipzone, where no usable signal can be received, is commonly found between the limits of the groundwave range and first skywave contact with the earth. The skipzone, obviously, can cause a great deal of difficulty for communications planners. This phenomenon and the ability of the communicator to eliminate it are discussed by LtCol David M.Fielder, NJARNG, in an Army Communicator, Spring 1986, article. In the article, LtCol Fielder states: "There can be a skipzone if the communicator selects an antenna with too low a radiation angle, but there is no skipzone unless you, the communicator, create it!... We must banish forever the term skipzone and the thinking that created it."

LtCol Fielder knows what he's talking about. More often than not, the antenna that is chosen for tactical short-range HF communications is the vertical whip, simply because it comes with the radio. The vertical whip antenna has low-angle radiation patterns that are vary conducive to groundwave propagation, but skywave reflection back to earth can be expected at a point no less than 100 miles from the transmitting antenna. Therefore, a skipzone has been created the groundwave becomes too weak for communication and ends where the skywave returns to the earth. This gap can vary from 30 to 90 miles in length and thus creates immense communication difficulties in an average-sized amphibious objective area (AOA).

Eliminating the skipzone

The NVIS concept can eliminate the skipzone by providing continuous short-range communications with no such gaps in coverage. Numerous articles and FM 24-18 describe this technique of transmitting HF energy at a very high takeoff angle (70-90 degrees) and letting it reflect back off the ionosphere saturating a small area of the earth. Appendix M of FM 24-18 describes the effect as "similar to taking a hose with a fog nozzle and pointing it straight up. The water falling to the earth covers a circular pattern continuously out to a given distance".

In order to produce strong signals at NVIS angles, antennas must be selected that maximize energy radiated skyward yet minimize groundwave radiation. In order to produce this desired effect, the antennas used will normally be horizontal. The most commonly used NVIS antenna for meeting short-range HF communications is the versatile and efficient horizontal half-wave dipole, also know as a doublet. There are other specially designed antennas that can produce the desired effect, but the standard dipole is the simplest to construct and most widely used for NVIS communications.

Frequency selection for NVIS and all other skywave paths is critical to the successful establishment of communications. Frequency selection is based on a reference point called the critical frequency, above which radiated energy will not be reflected back to the earth by the ionosphere. A frequency selected above this critical frequency will therefore be useless as it burns through the ionosphere and travels on into space. This frequency is also directly related to the angle at which an antenna radiates. The steeper the angle becomes, the lower the critical frequency will be. The ideal angle for NVIS communications is between 70-90 degrees: therefore, the use of low frequencies is a characteristic requirement of NVIS. The optimum frequency for NVIS communications will normally be the 4-8 megahertz range during the day and the 2-4 megahertz range at night.

Testing NVIS

From 12-14 July 1988, FMFLant units conducted an NVIS communications exercise to evaluate the NVIS concept and to determine its suitability for employment as a reliable short-range (0-200 miles) communication procedure in the AOA. The test was conducted in a hub/spoke configuration with the 8th Communication Battalion (hub) controlling the net at Camp Lejeune, NC, and four outlying stations (spokes) located at Beaufort, SC; Norfolk, VA; Cherry Point, NC; and Oak Grove, NC. Two mobile stations were also used and moved throughout the operating area to determine if a skipzone was present.

All stations on the net used the AN/MRC-138 or AN/GRC-193 HF radio set (400 watts) as the primary radio. The manpack AN/PRC-104 HF radio set (20 watts) was also used to test the NVIS concept on low-power transmitters.

All static stations used the horizontal half-wave dipole antenna, while the mobile stations used the standard 32-00 vertical whip antenna (AT-1011/6), the vertical whip in a bent position, and a 32-foot horizontal wire to simulate the use of a 32-foot whip in a horizontal position.

Circuit reliability was calculated for communications between the static stations and was based on a voice transmission and reception every 15 minutes on the hour. Final circuit reliability totals were greater than expected with 100 percent reliability from the 8th Communications Battalion hub at Camp Lejeune to the Norfolk, Cherry Point, and Oak Grove stations. A 67 percent reliability rate was determined from the hub to MCAS Beaufort, but it is important to note that this station was outside the predicted NVIS reliability range by 44 miles.

The mobile stations travelling north and south from the Camp Lejeune hub stopped in 25-mile increments and communicated with 100 percent reliability rate to the hub and to the Cherry Point, Oak Grove, and Norfolk stations on the bent whip antenna and 32-foot horizontal wire with the latter exhibiting superior circuit quality and reliability over all paths. The advantage of using NVIS for short-range HF communications was even more graphically demonstrated during the establishment of a path between Camp Lejeune and Oak Grove (22 miles). The low-power AN/PRC-104 with the standard 10-foot vertical whip was used initially with negative results: upon connection of the 32-foot horizontal wire, loud and clear communications were not only established with Oak Grove, but with all other net stations, including Norfolk (167 miles). A significant finding associated with these results is that NVIS communications are not as dependent on radio power as are vertically polarized antennas. This was clearly demonstrated by the parallel performance of the low-power (AN/PRC-104) and high-power (AN/MRC-138) radios over various paths. This finding reflects how little power it takes to propagate via skywave when using an antenna that produces high angle radiation and little or no ground-wave. In summary, this phase of testing showed that low-power radios can be an extremely effective means of communications in the AOA.

Additional Advantages

In addition to providing a communicator with a highly reliable, short- range, skipzone-free HF communications means. The characteristics of NVIS also afford the following six advantages:

- Terrain does not affect loss of signal. NVIS will work well in mountainous terrain, such as Korea and Norway, where vertical whip antennas often fail to communicate.

- NVIS antennas can be located in terrain-shielded positions, thereby eliminating the need for siting of antennas on high ground where they are easily detected and more vulnerable to enemy action.

- Horizontal antennas used for NVIS communications are less susceptible to interference from atmospheric and manmade noise.

- NVIS communications are harder to jam. Terrain features can be used to block or weaken groundwave jammers, which are subject to path loss.

- NVIS energy is received from above at very steep angles, which makes direction finding from nearby (beyond groundwave) locations more difficult.

- Operators can use low power successfully, thereby lowering the probabilities of intercept and detection.

Summary

This NVIS communications exercise validated the use of NVIS as a communications means within an average-sized AOA and during the OTH assault. Horizontal, high-takeoff-angle antennas will ultimately enhance the reliability of short-range HF communications paths. The first step in exploiting this capability is to emphasize education and training on its proper use. NVIS instruction should be presented in all Marine Corps communications schools and appropriate doctrinal publications should incorporate its use.

Next, the Corps must tailor the NVIS concept to meet its own unique requirements. This entails further testing and the development of field antenna kits,on-the-move mobile antennas, and specially designed U.S. Navy NVIS antennas for shipboard use.

If we are to hone our OTH warfighting capabilities effectively, it is imperative that a reliable and survivable C3 system be established. SatCom, as previously mentioned, has inherent limitations, and therefore HF communications must be viewed as a primary or equal means of communication. With this increased reliance on HF, it becomes increasingly important that we properly train our personnel in the use of NVIS and ultimately ensure that it is incorporated into communications plans to allow for increased proficiency in its use.

REPRINT
From *Reserve News*, *Los Angeles County Sheriff's Department*, October 1996
Vol X999 No. 10

Los Angeles County Emergency Operations Center

by
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and S/R Sergeant David L. Peltz

A major earthquake rumbles through the County, or, perhaps there is a huge power blackout, a large civil disturbance, or even a series of floods or wildfire. What these different kind of incidents have in common is that they all require a single place which can bring together managers and staff from various County Departments, including the CAO, Sheriff's Department, County Fire, the Coroner, Public Works, Social Services, Health Services, ISD, as well as LAPD, CHP, CalTrans, the Red Cross, and, on occasion, the FBI, Army, Marines, National Guard and others, to manage the emergency. That single place is the County Emergency Operations Center (EOC).

To house the large physical facilities and the growing number of complex and sophisticated systems needed to bring all these resources together, the County of Los Angeles has recently constructed a new 36,322 square foot, base-isolated complex to house the EOC. It is located on a hill near Biscailuz Center. The Sheriff's Communication Center is on the same hill and formerly was used as the County's EOC.

Once activated, the EOC serves as the focal point for the management of County operations and resource allocations as well as a point of liaison with State and Federal agencies during a crisis response. This activation continues during recovery from a disaster or emergency. The facility and its systems incorporate state-of-the-art technologies that are fully dedicated to emergency management.

The EOC is unique because of its structural design, complete self-sufficiency, the technology within the building, and the following combination of factors:

- Covering over 4,000 square miles, and with a population of more than 9,000,000, Los Angeles County is enormous; it contains 88 separate cities.

- Los Angeles County is located in one of the most disaster-prone areas of the United States and is subject to exceptional earthquake hazard. Also, the County has already experienced other types of major emergencies such as, floods, riots, and fires, and any of these could recur at any time.

- The EOC was specifically designed as an essential services facility that must address all types of emergencies and continue to function during all local emergency conditions, including fires, hazardous materials incidents, broken water mains, and complete loss of all utilities.

- The EOC is a single-purpose facility, fully dedicated to emergency management. The EOC does not and will not share building facilities with other departments and agencies except as they relate to the planning, preparation and coordination of emergency operations.

The EOC facility affords automatic information management, highly versatile audio/video displays and substantial emergency management support capabilities. To do this, it employs the following:

- EMIS (Emergency Management Information System) computer system,

- LASD Radio, Fire Radio, DPW Radio, Red Cross Radio and DHS Radio,

- DCS (Disaster Communication Service) Amateur Radio,

- CWIRS (Countywide Integrated Radio System),

- CUBE (Call Tech/US Geological Survey Broadcast of Earthquakes),

- EBS (Emergency Broadcast System), (EAS in January 1997),

- ENN (Emergency News Network),

- FAX and telephone facilities,

- GIS (an on-line Geopraphic Information System),

- OASIS (Operational Area Satellite Information System),

- Infrared Audio System (12-channel headsets fed by a wireless infrared facility which allows user-selectable monitoring of desired audio),

- Television monitors in nearly every room,

- Large screen projection displays (for TV and computer-derived data) in the Situation Room.

The EOC incorporates enough dedicated workspace to accommodate the staffing requirements of each of the assigned County Departments. The EMIS computers allow direct data communication between the components of the emergency organizations. It provides tracking of related activities and displays event status. Interactive systems plot information on geographic mapping displays, create information data bases, process requests for action, resources, or both, and maintain a running chronicle of events.

The design of the EOC and its systems were predicated on the requirements that twenty four hour operation of the facility during all types of emergencies and disasters be conducted in a completely self-sufficient, safe environment.

Mechanical and electrical systems, as well as all technical support systems are fully redundant with no single point of failure.

The EOC is designed to:

- House the Los Angeles County Sheriff's Department Emergency Operations Bureau and the emergency management personnel from seven other County Departments on a daily basis;

- Serve as a training site for county emergency management and the advisory personnel from several participating agencies;

- Serve as a centralized point for media contact regarding County-wide emergencies;

- Provide a safe environment where the occupants (25 daily, 167-224 during an emergency) are protected from the effects of a natural of man-made disaster such as an 8.3 earthquake along the San Andreas Fault;

- Allow emergency management personnel to work and live unassisted, without resupply, in a completely self-sufficient environment for seven days during an emergency.

The facility rests on 28 base-isolators that allow the building to move 16 inches in any horizontal direction. All utility connections are flexible and design requirements are two to four times above the standards established by the Building Code. Forty thousand gallons of water are maintained on-site to ensure fire fighting capability and the availability of domestic water should an off-site water main break due to an earthquake.

The building has three separate heating, ventilating and air conditioning (HVAC) systems. If necessary, the system can filter hazardous materials from all incoming air. Three 500 KVA diesel generators supply emergency power. All data systems are maintained during a power failure by a 200 KVA uninterruptible power supply (UPS) that can run the entire

data systems operation at maximum load use for 15 minutes. Generators come on-line automatically within 10 to 30 seconds. Twenty five thousand gallons of diesel fuel are maintained on site to ensure seven days of emergency power.

The EOC consists of five principal areas which are defined by their function. The areas are controlled by an electronic access security control system that includes 23 remote controlled security cameras.

1. Public Area: The public area encompasses the exterior grounds within an alarmed security fence. Security cameras linked to each alarm zone provide 24-hour surveillance of the area.

2. Lobby Area: The lobby area constitutes the primary public access point to the EOC and controls further circulation into the facility by means of a bullet resistant security control center. The lobby, media viewing room, and rest rooms are located within the lobby area.

3. EOB Area: The Emergency Operations Bureau (EOB) Area is comprised of all "daily support space" for emergency managers responsible for special event tactical planning, emergency planning and the Disaster Communications Service (DSC).

   The EOB Area also includes conference rooms for the County Board of Supervisors and the Emergency Management Council should they convene at the EOC during an emergency. A dormitory, kitchen, food storage area, and dining room have also been included to ensure that the facility is completely self sufficient.

4. Incident Command Center: A description of the Incident Command Center (ICC) begins with the Situation Room at its core. This is the focal point and largest room within the EOC. Positioned around its perimeter are the Department Operations Centers of the Sheriff and the Chief Administrative Officer and the workrooms which were designed to accommodate the five functions of the Standardized Emergency Management System (SEMS). These functions, derived from the Incident Command Center (hence the ICC), are: Management, Operations, Planning/Intelligence, Logistics, and Finance & Administration.

   This area is one of the highest security levels in the EOC complex; access to this area is based upon need. When not activated for an emergency, this area is used by emergency management personnel for planning, training and exercise simulation.

   Rounding out the first floor area are two conference rooms and the communications room containing radio and computer equipment to enable the Center to communicate with every fire and law enforcement agency within the county.

5. Technical Support Areas: The Technical Support Areas have the highest security level in the EOC complex; access is based upon knowledge of the systems and need for access. The areas include Telephone Equipment Rooms with an NEC 2400 computerized telephone switch to control 300 telephone lines; the Computer Systems Room with SUN SPARC1000 servers and network routers; the Electronics Room

with audio/video electronic path panels, tuning and duplication equipment; the Projection Room with three computerized Barco 1209 rear screen projection displays; the Video Mapping Data Room for intelligence analysis on the Geographic Information System (GIS) and news media video; and the Electrical Power Rooms with UPS and automatic switch gear for emergency generator power.

The EOC audio/video system includes equipment for the distribution of video signals, both dedicated and switchable, throughout the EOC Building.

The Situation Room displays signals on three six foot, fresnel, rear projection screens. Six large monitors above the three large screens also provide the ability to view simultaneously four different, local, off-air media broadcast signals and two satellite signals. Additionally, several other monitors are located throughout the facility as part of the information distribution process so that EOC staff can maintain a high level of awareness during an emergency.

Information is distributed to EOC staff so that they need not to assemble in the Situation Room for a briefing. Map displays, briefings and other video sources can be viewed from conference rooms, daily work areas, and the specially-designed SEMS emergency work-rooms, thereby eliminating the need for emergency management staff, who support command level decision makers, to stop their work and gather in the Situation Room for briefings. The Audio/Video System assists emergency management staff, who support command level decision makers, by letting them continue their work rather than gather in the Situation Room for a briefing.

Extensive acoustic engineering controls the sound levels in the Situation Room. A variety of video and radio signals is distributed in the Situation Room or throughout the first floor area using an infrared sound distribution system. The system incorporates the use of infrared sound emitters in every room and corridor of the Incident Command Area. The infrared system allows emergency managers to select any one of twelve channels, including a Situation Room briefing, six televised media broadcasts, NOAA Weather, two commercial AM/FM radio broadcast signals, Sheriff's Department Radio, Fire Department Radio and any of several other radio systems.

The Audio/Video system includes a special intelligence analysis area that allows EOC staff to examine news media video footage. The system will also assist in the control of public panic with accurate, analyzed information from the Public Information Officer in the Media Viewing Room and via the Emergency Broadcast System (EBS) and the Emergency News Network (ENN) managed by the Sheriff's Department.

The EOC is equipped with several redundant communications systems with two hundred multiple-line telephones located throughout the building. Fax machines are distributed in the EOC using dedicated data lines. The Operational Area Satellite Information System (OASIS) furnished by the State of California provides voice and data transmission capability directly to the State of California and other operational areas.

Radio systems include Sheriff's Department 480 Mhz with 55 frequencies; Disaster Communications; Fire Department; County-wide Integrated Radio (CWIRS); Mutual Aid Radio Contact with every police and fire agency in Los Angeles County; and radio systems for Public Works, FEMA, American Red Cross, and Health Services. Aircraft radio is available through the Sheriff's Department Aero Bureau and the Fire Department. Disaster Communication Services (DCS) Packet Radio provides a redundant data transmission path to 32 sites within Los Angeles County as well as 120 terminals within the EOC automated Emergency Management Information System (EMIS). DCS is an organization managed by EOB that coordinates the activities of 1,900 amateur radio volunteers. Mr. Jerry Kurtz, a civilian volunteer/employee, who is virtually handicapped, works the amateur radio system and has been with the Sheriff's Department for 30 years.

Military radio systems are available through the National Guard and will be installed in the EOC on an as-needed basis. The National Guard has dedicated workspace within the EOC and a special underground duct to an on-site staging area that provides power, telephone and data connections to the EOC.

The core of EOC technology is the Emergency Management Information System (EMIS). The system was developed based upon proven emergency management procedures and the essential elements of information tracked by the original, paper-based system used by the County's eight, lead emergency management agencies. EMIS employs two, fully redundant, SUN SPARC1000 servers with independent UPS, to manage five principal components of EMIS on a SUN UNIX (Computer) platform. Each person seated in the EOC's Situation Room (see cover photo) and the adjacent workrooms is equipped with an EMIS workstation. Other EMIS workstations are remotely located at various department facilities throughout the county and can be used to enter and retrieve incident data as well as to exchange e-mail with all other EMIS users.

EMIS has been designed to enhance communication and decision making by furnishing fast, accurate data while ensuring that communications remain intact. Command personnel in the EOC can, within minutes of a disaster, view a map that will depict events and incidents as they are reported. Demographic information contained in the GIS system (Geographic Information System) will also be available so that the unique characteristics of the affected area(s) can be taken into account.

EOB is looking to expand its Reserve Company, including Civilian Volunteers. If there are any interested parties, please contact Sgt. Robert Torrance at (310) 946-7961 or S/R Captain Pete Ramirez at (310) 946-7204.

First Regional Workshop on Emergency Telecommunications for the Central American and Caribbean Region

ANNEX 7

Port of Spain, Trinidad and Tobago,
4 to 9 November 1996

Trinidad Hilton and Conference Centre 8 November 1996

SUMMARY OF RECOMMENDATIONS
prepared
by
John Scott,
Centre for Public Service Communications,
Arlington, VA

Introduction

The participants recognized the importance of increased cooperation among the states and territories in the region as well as between the emergency management and telecommunications sectors in the prevention and mitigation of disasters.

Participants agreed that it is imperative that the broad framework of disaster management (including prevention, preparedness, mitigation, response, and recovery) be the basis from which discussion should proceed and that all sectors of emergency management must be encouraged to engage in the discussions since each uses telecommunications technologies and service in the conduct of their respective roles and responsibilities.

The participants noted that the breadth of technologies involved in disaster telecommunications included telecommunications service providers and equipment manufacturers as well as government and private sector representatives of applied sectors of broadcasting, remote sensing, Internet, Amateur Radio, etc.

Consensus Agreements and Observations

1. Workshop participants recognized that a number of agencies are undertaking activities to develop regional emergency telecommunications capabilities and services. It was agreed that mechanisms to ensure enhanced regional cooperation along with improved national level cooperation were necessary. The workshop discussed approaches to achieve this, focusing on initiatives already being taken by such agencies as CDERA, CTU and others.

2. Workshop participants expressed their support for the Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations, and encourage their respective governments to adopt the Convention when it will be formally presented at an Intergovernmental Conference in 1997.

3. A report on the First World Telecommunications Policy Forum (Geneva, 21-23 October 1996), dealing with the Global Mobile Personal Communications by Satellite was presented for discussion. Workshop participants agreed to provide ITU with comments on the Draft MOU by the end of December 1996.

4. It was noted that while Resolution 640 covers short term frequency allocation for emergencies, the workshop participants agreed that every effort should be made to pursue a long term solution to the issue of frequency availability for emergency telecommunications, and specific appropriate steps should be taken to solicit the allocation to emergency telecommunications service of specific frequency bands by a future competent ITU World Radio Conference.

5. Workshop participants noted the importance of telecommunications technology for emergencies used by the national and international telecommunications services and equipment providers. Further, emphasis was given to the following:

   a) guaranteeing the survivability of telecommunications systems;

   b) reexamining the cost and tariff structure to ensure the lowest possible price for emergency telecommunications services;

   c) ensuring the increased participation of telecommunications service and equipment providers in all aspects of disaster preparation and response planning, including training and education; and

   d) examining overall regimes for charges applied for the movement of equipment and materials with the goal of facilitating the provision on emergency telecommunications in disaster management.

6. Workshop participants supported new and continued cooperative initiatives towards enhancement of policies and programs for emergency communications. For example:

   a) It was also noted that CDERA has initiated a number of high level activities to promote Internet in disaster management efforts within the region and is inaugurating a World Wide Web service in the near future. It was further noted that the Emergency Preparedness and Disaster Relief Coordination Program of the Pan American Health Organization is planning to expand its health sector Internet initiative into the Caribbean region as the third phase of its program which now includes Central and South America. Workshop participants indicated support for CDERA as a liaison to this PAHO initiative, and look forward enthusiastically to a regional workshop on "Use of the Internet in Disasters in the Caribbean" that is being planned by PAHO and DHA in the 1997 time frame.

b) The CTU intergovernmental effort to promote regional and multilateral support for technical assistance programs in the sector.

The discussions on themes of the agenda are summarized as follows:

Working Group A1
Telecommunications Requirements of Disaster Mitigation and Response Mechanisms

Frequency allocation, maintenance of equipment, training, standardization and the use of modern technology were among subject areas considered. The group focused on problems encountered in the region and identified the following issues as needing further attention:

1. Regional cooperation in emergency communications should be strengthened by collaborative efforts between CDERA, CTU, and other appropriate regional agencies and national emergency telecommunications coordinators of member states.

2. That adequate attention should be given to appropriate ways in which the new GMDSS system can be linked to national telecommunications networks.

3. ITU Radio Regulations urge administrators to take into account the possible needs for communications by radio when national communications are interrupted or not available. Resolution 640 opens certain frequency bands allocated to the Radio Amateur Service under certain conditions for international disaster communications. However, there is need for a short term measures aimed at addressing the problem with frequency allocation while more long term measures are being discussed. Short term measures could include the identification of coordinated frequencies (outside the Amateur Bands) at the regional level. In the long term the frequency problem might be resolved by allocating frequency bands for the emergency telecommunications service so that this will have to be included in the agenda of a future competent ITU World Radio Conference.

4. Consideration should be given to ensure that EOC radio rooms within the region be equipped with a secondary source of power to enable them to function in the absence of the regular power supply.

5. There is an unmet need in the region for adequate training of emergency telecommunications personnel in the use and maintenance of equipment. Creation of certifiable training programs might be a way to address this problem

6. Modern technology should be used to the advantage of emergency telecommunications within the region. This would ensure that broad-based applications would not be limited to HF and VHF radio, but would include all appropriate technologies and modes of communications

7. A real need was expressed that message forms and other documentation used in emergency telecommunications should be standardized throughout the region.

8. There was also a suggestion that there would be value in developing an evaluation guide for use in the region.

9. An inventory of telecommunications resources in the region should be compiled.

Working Group B1
The Vulnerability of Telecommunications Networks

1. Governments, Administrations, and Operators might benefit from:

   a) Preparation of national assessments of risk, including identification of those natural hazards which pose disaster threats to telecommunications systems;

   b) Preparation of national and/or local prevention and preparedness plans, including adoption of telecommunications infrastructure construction and maintenance practices to resist or avoid hazards;

   c) Sensitize these vulnerability assessments and preparedness and prevention plans among telecommunications operators within the region;

2. Administrations and Operators may seek to secure copies of prevention and preparedness plans from areas of similar vulnerability around the world.

3. Administrations and operators should maintain backup systems in the face of new technology penetration.

4. Administrations should develop a regular and standardized process for revising and updating procedure for mitigation and restoration and make these revisions and updates known to all concerned on a timely basis.

5. Where possible, simulation exercises should be conducted regularly and with the evolvement of all relevant entities.

6. Administrations are encouraged to conduct research designed to access the impact of new industrial development on telecommunications vulnerability.

7. Administrations are encouraged to maintain constant public awareness as to potential for telecommunications interruptions in disasters.

8. Administrations are encouraged to maintain suitable building codes for EOCs and telecommunications facilities in the region.

9. Administration are encouraged to foster continued cooperation between neighboring islands for recovery (e.g., in the event of major aircraft accidents).

10. National entities might consider augmenting their telecommunications systems by emulating amateur systems design.

The recommendation was made that CANTO be asked to investigate and collect information regarding the vulnerability of telecommunications networks and distribute the results to the telecommunications operators in the form of a "lessons learned" report.

Working Group C1
Structuring the Role of the Amateur Radio Service in Disaster Management

The historic role of Amateur Radio operators in disaster management was discussed and affirmed. It was also noted that significant involvement of Amateur Radio operations will continue into the foreseeable future and there is a need, therefore, to reconcile this role in the context of broader disaster preparedness and response coordination mechanisms. The working group identified and elaborated on issues that must be considered in order to optimize the integration of the role of radio amateurs into existing and future national, regional, and international formal emergency management systems. Among the issues discussed, it was the working group's considered opinion that:

1. Amateur radio operators should be seen as providing resources that are complementary to national and regional emergency telecommunications assets. Each nation has a responsibility to provide for adequate telecommunications infrastructure that has been designed with the particular vulnerabilities of the nation in mind. Amateur Radio resources should not be considered as replacement for emergency telecommunications infrastructure. They should be considered complementary.

2. It was noted that Amateur Radio operators providing Amateur Radio services should function as communicators, and not be seen as replacements for other emergency functions or as assuming the role of emergency managers

3. Amateur Radio operators functioning as communicators of vital information prepared by statutory disaster management authorities should be common, standardized terminology, such as advocated by CDERA. Governments should not use radio amateurs for routine communications, nor should Amateur Radio operators be requested to interpret messages in emergency situations. This being said, it was also recognized that a valuable role is played by amateur radio operators in communicating health and welfare information, especially on behalf of individuals and families who may otherwise have no means to ascertain the status of their loved ones and property.

4. In an effort to facilitate and support a collaborative relationship in emergency situations, the value of Memoranda of Understanding between radio amateur groups and emergency management agencies was discussed. It was the opinion of the working group that involvement in these discussions should be at local/parish, national, subregional, and regional levels and that roles and responsibilities of each entity should be defined as a preparedness measure. It was further discussed that consideration should be given to improving notification to employers for releasing employees for disaster service. Emphasis was placed on the need to develop a plan to provide for replacement of personal equipment damaged while in service during official communications activities.

5. It was also noted that there is a need to further discuss the issue of encouraging governments to coordinate purchase of radio equipment with the amateur radio community for field application as well for use at EOCs to ensure that amateur equipment is complimentary with equipment of the government.

6. Finally, international licensing was discussed as an important factor in facilitating the movement of amateur radio operators across national borders.

The working group proposed a number of policy issues for possible action:

1. There is a need for technical assistance from government and/or NGOs to amateur radio groups in regard to specialized disaster training, specialized equipment, and facilities within emergency management compounds.

2. There is a need for formal recognition of the role of Amateur Radio in emergency management and the development of memoranda of understanding at national levels.

3. There is a need to support development of detailed comprehensive operational emergency planning between emergency management and Amateur Radio groups in a collaborative manner.

4. There is a need to eliminate barriers to the importation of amateur equipment and supplies.

5. All nations should sign and ratify the International Amateur Radio Permit.

6. There should be a conference of Regional Amateur Radio Groups and Emergency Management Officials and decision-makers to discuss common problems, such as standardizing equipment and defining protocols.

7. It is recommended that radio amateurs in the region support and provide meteorological information to established international and regional amateur weather networks including the Hurricane Watch (14.325 MHz) which serves as an important data source for the National Hurricane Center (US). And further, that each island-nation should have at least one "Automatic Packet Weather Reporting Station" linked to the Hurricane Center via amateur collaboration.

Working Group A2
Transborder use of Telecommunications Equipment, Licensing Requirements

Introduction

The session consisted of two short presentations given by delegates of the Bahamas and St. Kitts-Nevis, followed by a discussion on existing problems related to the issuing of licenses and the role of the department of Customs and Excise. Finally, the group tabled a number of recommendations which can resolve the above problems.

Bahamas

The delegate of the Bahamas outlined the structure and objectives of the National Emergency Operations Center (NEOC). He also listed main telecommunications tools used by his organization. The NEOC as a body coordinates activities related to disaster mitigation, relief, and recovery. It makes use of cellular telephony, VHF radio, portable satellite terminals, the radio system of the Red Cross and the state broadcasting facilities.

St. Kitts-Nevis

The St. Kitts-Nevis delegate summarized the main features of the country's national Emergency Management Agency (NEMA). The organization has at its disposal the following telecommunications facilities during emergencies.

- four commercial radio stations (two each in St. Kitts and Nevis);
- two TV stations (one government-owned, one private);
- cable TV network which transmits weather information on a channel during a hurricane;

Other equipment used include radio transmitter (frequency 7-850 MHZ) and satellite voice channels. NEMA receives assistance from amateur radio operators. The delegate reported that the Internet service (called "Caribnet") has proved itself too slow even for non-critical activities.

Problems

The problems related to the theme of this session include:

1. The issuing of licenses, and
2. The "red tape" which emanates from the Department of Customs and Excise (of the various Caribbean territories) with respect to the transfer of equipment from one country to another.

However, in St. Kitts-Nevis, NEMA advances the paperwork prior to the arrival of the equipment, thus simplifying the admission process. Barbados, too, conducts similar facilitation exercises on a bilateral basis when it becomes necessary to transfer equipment used in the Eastern Caribbean Fiber System (ECFS). However, the transfer of ECFS equipment to the French territories requires a lead time of some three weeks to process the paperwork. The entry of telecommunications equipment into Barbados and Trinidad and Tobago requires placement of bonds until the articles leave the two countries. In the case of Trinidad and Tobago, obtaining a license does not present any difficulty.

Recommendations

1. To increase the efficiency in net-controlling in preparation for a response, each country should, according to schedule, agree on common regional emergency network frequency bands.

2. That Amateur Radio Groups should have a representative in the regional emergency network to enhance Amateur Radio organization in each country.

3. Design a mechanism to facilitate transborder communications with non-English-speaking countries, especially the dependent Dutch and French territories.

4. National Emergency organizations should include a representative from the Department of Customs and Excise and should consider waiving the bond normally placed on telecommunications equipment during an emergency requiring transborder activities.

5. Each country should negotiate and sign a multilateral agreement with other countries with a view to the elimination of duties when moving (for emergency use) telecommunications equipment from one country to another for pre- and post disaster activities.

Note:

Out of the need to respect the sovereignty of nations, users of the Iridium and Odessy LEO/MED satellite systems should not operate from those counties which have not obtained a license to access the system. However, an INMARSAT terminal, once registered, can act as a gateway from any country provided that the host country issues the relevant license.

Working Group B2
Cost Effectiveness and Tariff Structures for Emergency Telecommunications

Mitigation and warning

1. It was noted that adequate structures/systems/networks which exist should be made use of as far as possible because they are tried and tested. These include local networks, amateur networks, others.

To ensure cost effectiveness:

2. It was noted that special tariffs for some services, already in place should be expanded to other nations. These include systems for Meteorological and Seismic Monitoring.

3. The working group also discussed the need for special tariffs covering emergency simulations, testing, etc.

Incident

1. To ensure cost effectiveness protection/security of local telecommunications facilities needed.

2. Education of public to minimize expensive restoration (e.g., system crash due to overloads, vandalism of cables, etc.).

- Need for tariff removal agreement for amateur radio operators (e.g., link to local and international networks, and carrying third party traffic through external administrations)

Response

1. Each country should assess the need for large complex systems which would be expensive.

- Identify what is adequate for the incident,

- Identify what is appropriate (e.g., voice/data).

2. Administrations to assess the robustness of existing networks (e.g., redundancy, construction robustness, ability for self healing, etc.).

Recommendations

1. Telecommunications administrations provide a facility similar to 800 numbers for purpose of disaster preparedness and recovery.

2. Negotiations should be carried out by responsible organization (e.g., CANTO) for securing tariff free communications for testing and simulations and other considerations.

3. All major telecommunications administrations should be notified by regional body (e.g., CDERA) of disaster area.

Working Group B3
Recommendations for Compatibility and Standardization

The main issues discussed were: power, frequency, standards.

The following recommendations were made:

1. All radio equipment used for emergency telecommunications be able to operate on DC. 12 volts was suggested.

2. The establishment of an emergency telecommunications committee that was proposed in 1989 to focus on network design, standards and compatibility of equipment and to implement and commission a regional system for emerging telecommunications.

3. Common frequencies for emergencies on a national and regional level that the short term solutions being used be replaced by long term solutions.

4. That the short term solutions being used to be replaced by long-term solutions.

5. That a resource catalogue be produced which will enable countries of the region to source spare parts to restore their system after a disaster.

Working Group C3
The Role of Internet in Regional Emergency Telecommunications in the Region

The working group noted the importance of the Internet as an additional system for strategic decision-making and operational coordination of emergencies as well as a means to gather and exchange information to support planning and prevention efforts. In particular the working group considered the value of the Internet in preparing for disasters by providing easy, low cost access to data from widespread sources, allowing efficient distribution of important information to diverse audiences, and facilitating the improved organization, coordination, and policy making concerning disaster mitigation.

Given the many proven practical benefits of the Internet the Working Group recommends:

1. That national, multinational, NGO, and private disaster mitigation and response organizations continue to provide and expand their use of the Internet to access relevant information; and to provide which information to each other, professional organizations, the media, and the public; to coordinate their mitigation activities; and to further collective action on other recommendations resulting from this workshop. In this respect, the Emergency Preparedness and Disaster Relief Coordination Program of the Pan American Health Organization is planning to expand its health sector Internet initiative into the Caribbean region as the third phase of its program which now includes Central and South America. The Working Group endorsed this

idea and recommended that the initial Caribbean liaison for initiative be St. Lucia which has agreed and has offered to host a workshop, in cooperation with PAHO and DHA, on "Use of the Internet in Disasters in the Caribbean" in the 1997 time frame.

2. That national, multinational, NGO, and private disaster mitigation and response organizations cooperate with each other to establish and maintain a directory of relevant information available via the Internet (i.e., WWW sites, e-mail addresses of disaster managers and telecommunications service providers, etc.).

A caution was given that individuals and organizations intending to use Internet information during or in the immediate aftermath of a disaster event must ensure that the communications links they rely on to access Internet are not themselves susceptible to damage during a disaster, or ensure that reliable redundant links are available.

Telecom workshop to identify regional priorities

THE Regional Workshop on Emergency Telecommunications for Central America and the Caribbean ended last Friday on a positive note at the Hilton, as delegates exchanged commitments that would see improved regional and international cooperation in programmes and policies for disaster mitigation and relief.

One immediate outcome was the commitment by the COMSAT Mobile Communications of the USA to conduct training and orientation in emergency for telecommunications personnel of the region. The undertaking was as a result of one of the major points of discussion before the workshop, namely, the high cost of emergency telecommunications equipment.

The workshop paid great emphasis on examining the overall regimes for charges applied for the movement of equipment and materials, with the goal of facilitating the easier provision of emergency telecommunications in disaster management.

The cost issue formed a central feature of the Draft Convention on the Provision of telecommunications resources for Disaster Mitigation and Relief Operations drawn up by the United Nations Working Group on Emergency Telecommunications.

In the end, the 100 or so participants from the English, Spanish and French speaking Caribbean and Mexico expressed a commitment to encourage their respective governments to adopt the Convention, when it will be formally presented at an intergovernmental Conference in 1997.

Participants also supported new and continuing initiatives towards greater cooperation among regional agencies at enhancing policies and programmes for emergency communications. They pointed to the efforts of the Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Telecommunications Union (CTU).

Local host, the Caribbean Telecommunications Union, through its Secretary General, Roderick Sanatan, underscored the multi-sectoral involvement in the workshop as recognition of the many agencies necessary to be involved in disaster mitigation response and recovery efforts.

The workshop benefitted from significant involvement of the local and international private sector, intergovernmental agencies and representatives of national disaster coordinating agencies.

The Workshop, funded by the Government of Switzerland, was sponsored and convened by WGET, UNDHA, CTU, CDERA and ITU.

TRINIDAD GUARDIAN, Tuesday, November 5, 1996
national news

Workshop on disaster communications

MEMBER states in the Caribbean region which are prone to some of the worst natural disasters that could wipe out entire economies do not have the full capacity to respond when these untimely events occur.

Telecommunication systems, one area of significant importance, will engage the attention of some 100 regional and international officials in disaster management/ relief and telecommunications at the Trinidad Hilton today.

Prime Minister Basdeo Panday is scheduled to deliver the feacure address at the opening of the five-day workshop which has as its theme "Emergency Telecommunications for the Central American and Caribbean region"

National Security Minister, Joseph Theodore, also is listed to address the participants in the La Boucan Room. Other issues the workshop will consider include the disaster scenarios and response mechanisms in the region; the vulnerability of telecommunication networks to natural and man-made disasters and the trans-border use of telecommunications equipment.

While natural disasters will be the major point of focus, Trinidad and Tobago will have to worry about its preparedness for man-made disasters, especially with its heavy industrial concentration on the west coast. The delegates will undertake a tour of the Point Lisas estate to examine equipment in place and the estate's preparedness in the event of a disaster.

The Caribbean Telecommunications Union, regional host of the workshop, anticipates that recommendations emanating from the exercise will influence current international efforts at getting a global convention on the provision of telecommunications resources for disaster mitigation and relief operations.

Telecommunications systems are essential to all humanitarian relief and assistance operations, especially those requiring international assistance.

TRINIDAD GUARDIAN, Wednesday, November 6 , 1996
national news

Disaster network for Pt Lisas soon

By NARRISA MANDOL

A national telecommunication network, responsible for handling communications during disasters and emergencies, will soon be expanded to cater for the emergency needs of the Point Lisas Industrial Estate.

Prime Minister Basdeo Panday made this announcement yesterday while delivering the feature address at the opening of a five-day regional workshop entitled "Emergency Telecommunications for Central America and Caribbean Region" at the Trinidad Hilton.

International organisers of the workshop include the United Nations Department of Humanitarian Affairs and the International Telecommunications Network.

Panday said the expansion was necessary because of the high level of risk which exists at the Point Lisas Industrial Estate.

"The network is to be expanded shortly to address the needs of the Industrial Estate at Point Lisas where a high level of risk exists and an effective emergency telecommunication system is necessary," he said.

He also said a simulation disaster at Savonetta Pier would take place during this month.

NEWSDAY Wednesday November 6, 1996

MONEY PAGE

PM: Better emergency telecommunications needed

By CURTIS RAMPERSAD

PRIME MINISTER Basdeo Panday yesterday expressed the need to examine regulatory and legal issues governing telecommunication development in light of "recent disaster experiences in our region which have re-emphasised the need to vigorously address our emergency communication arrangements."

"Emergency telecommunication as a subject of the wider telecommunication developments can only be an effective mechanism in times of disasters, if the regulatory framework allows for the rapid deployment of the technology," he added. Speaking at the opening of the Regional Emergency Telecommunications workshop held at the Trinidad Hilton, Panday explained that new technology, such as Satellite Cellular telephone systems introduced by the International Telecommunications Union (ITU) in Geneva three weeks ago, "can be extremely useful in disaster situations and as is applicable with all new technologies, would require a new set of regulatory measures in light of its impact on other services."

Local initiatives such as the Disaster Preparedness Committee which was appointed in September 1995 and is chaired by the Point Lisas Industrial Port Development Corporation (Plipdeco) and the establishment of a Telecommunication Authority which will act as an advisory body to Government were also discussed by the Prime Minister yesterday. Panday also disclosed that a simulation disaster at Savonetta Pier which was intended to test the Point Lisas Industrial Estate Emergency Evacuation Plan and the Couva Regional Council Community Evacuation Plan among others, was also scheduled for later this month.

NEWSDAY Tuesday November 5, 1996

Panday to open workshop on telecommunications

PRIME MINISTER Basdeo Panday will deliver the feature address at the Regional Workshop on Emergency Telecommunications at the Trinidad Hilton at 9 am today.

The workshop, which will also be addressed by National Security Minister Joseph Theodore, is expected to promote enhanced co-operation among Caribbean Member States in the area of emergency telecommunications and disaster mitigation.

The vulnerability of telecommunications networks and man made disasters and possible solutions will also be discussed.

The workshop is being funded by the Government of Switzerland and is organised by the Secretariat of the Working Group on Emergency Telecommunications (WGET), the Caribbean Telecommunications Union (CTU), the Caribbean Disaster Emergency Relief Agency (CDERA) and the International Telecommunications Union (ITU).

Participants will come from all of the English, Spanish and French speaking Caribbean, Mexico, the United States and the United Kingdom.

"The fact is, without communications, you don't have organisation. You have disorganisation."

DISASTER COMMUNICATIONS

THE BOOK by Mark Wood

The **Disaster Relief Communications Foundation (DRCF), the Association of Public safety Communications Officials (APCO)** and the **United Nations Department of Humanitarian Affairs (UNDHA)** are pleased to announce the launch of the book **Disaster Communications** in both hard copy version and World Wide Web (html) version at the same time. It has taken five years of research and the involvement of many subject matter experts to compile this **"plain language"** overview of **Disaster Communications** problems and their solutions.

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