Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications Chairman - Sir Carlisle Burton

I. Title - Caribbean Emergency Communications Network

II. Description of need or problem:

When disaster strikes one of the first losses is the normal communications system. Telephone and electricity power cables are usually above ground and easily damaged. Other communications apparatus such as microwave antenna are also susceptible to damage by strong winds and/or flooding and topographical disturbance.

This has been highlighted recently by such events as the Guadeloupe and St. Vincent volcanic eruptions; hurricanes David and Frederic passing over or close to Dominica, Hispaniola and to a lesser extent other eastern Caribbean islands; and the flood disaster in Jamaica in June 1979. At present only a few Caribbean islands have communications equipment which can function in a disaster situation. A system which would remain operational despite disasters would ensure free flow of information between governments and international aid organizations. Also, internal exchanges of information would be possible. This would enable the correct decisions to be made quickly for relief measures and save unnecessary expenditure in the process.

Also, it might be advisable to have links with regional disaster supply depots, e.g. Puerto Rico for oil spill clean up equipment or helicopter assistance. Countries have already indicated their urgent need for this emergency communications system at the International Disaster Seminar held in St. Lucia in June 1979 and also during follow up visits made to most of the islands in the past few weeks.

III. Description of project and objectives:

An integrated emergency communications network with standby generator and battery facility. This system would need to cover three levels:

1) Regional (international), connecting islands and perhaps regional disaster depots.
2) National, connecting internal key centers i.e. central emergency operations center, police, hospitals, public utilities, etc.
3) Local, using mobile transceivers for use in disaster areas.

Provide radio communication equipment to those countries which do not have these emergency facilities. The type of equipment would be integrated with that already in existence. A detailed analysis of the radio systems already in use is being made. Several factors need to be taken into account, such as similar models to reduce costs of spares. This would allow mutual assistance with spares and permit a common installation arrangement. Some of the more developed countries have equipment already and from the same manufacturer.

IV. Actions to be taken by the country to enhance this project:

The equipment must be kept in a serviceable condition to achieve the purpose. All countries have technicians capable of minor maintenance and most countries have some fully qualified technicians. Certain countries could act as test centers for regular checks, e.g., Barbados, Jamaica, Trinidad, or Aruba, and the Dominican Republic would be suitable for H/F radio propagation reasons.

V. Justification for bilateral, regional, or international support of the project:

This is a 3-level scheme involving international and national needs to reduce disaster effects on the economy, in addition to saving life. As it is for an area covering many of the less developed countries, this would be an excellent long-term investment.

VI. External financial assistance/technical assistance:

For those countries requiring complete installations, these could be provided for about US$ 22,000 each. This would be made up as follows: regional $3,000, national $18,000 and local $1,000.

A preliminary assessment shows that some 5 or 6 countries are likely to need all three levels of communication, at an estimated cost of $130,000 and some 3 or 4 countries require national and local networks only, at $80,000. This amounts to a total cost of $210,000. It does not include installation costs, but modern equipment is compact and can easily fit in the corner of a room with a power point access. Small standby power generators should also not be difficult to site. A detailed estimate of cost will be submitted when all the information from countries has been collected and manufacturers' quotations received.

VII. Designation of Agency responsible for carrying out the project:

To be negotiated with interested agencies.

Drafted by: L.P. Stevens

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications Chairman - Sir Carlisle Burton

I. Title - An Emergency Communication Plan for Antigua and Barbuda

II. Description of need or problem:

When disaster strikes one of the first losses is the normal communications system. Telephone and electricity power cables are usually above ground and easily damaged. Other communications apparatus such as microwave antenna are also susceptible to damage by strong winds and/or flooding and topographical disturbance.

This has been highlighted recently by such events as the Guadeloupe and St. Vincent volcanic eruptions; hurricanes David and Frederic passing over or close to Dominica, Hispaniola and to a lesser extent other eastern Caribbean islands; and the flood disaster in Jamaica in June 1979. At present only a few Caribbean islands have communications equipment which can function in a disaster situation. A system which would remain operational despite disasters would ensure free flow of information between governments and international aid organizations. Also, internal exchanges of information would be possible. This would enable the correct decisions to be made quickly for relief measures and save unnecessary expenditure in the process.

III. Description of project and objectives:

To establish a national emergency communications network to link the vital centers of administration so that essential services could continue to function during and immediately after a disaster. This would include the provision of equipment at centers such as Police Headquarters, Disaster Committee Headquarters, Hospital, Airport, etc.

IV. Actions to be taken by the country to enhance this project:

Provision of a site and full assistance with information, installation assistance and maintenance.

V. Justification for bilateral, regional, or international support of the project:

This is part of a regional Caribbean project which is being submitted for international support. It would save human life and reduce the economic effects of disasters and enable quick and accurate administrative decisions to be made.

VI. External financial assistance/technical assistance:

To include equipment at key centers with emergency power generation; and short range mobile (hand held) sets at a cost totalling US$ 22,000.

VII. Designation of Agency responsible for carrying out the project:

To be negotiated with interested funding agencies.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications Chairman - Sir Carlisle Burton

I. Title - Telecommunications Network for CERO, Barbados

II. Description of need or problem:

Barbados needs an efficient and secure system of telecommunications in the face of its vulnerability to natural disasters, fire and aircraft accident.

The equipment on which CERO depends is outmoded and mostly unserviceable - some being as much as twenty-seven years old and some twenty-one.

Present equipment operates on the AM frequency and since few manufacturers are still making such equipment, parts are difficult to obtain. The system is susceptible to noises and is vulnerable to interference, particularly from the television station. The range is very limited. The system is most insecure, for messages can be picked up with almost any simple instrument.

III. Description of project and objectives:

A survey which was undertaken by ITU has provided a sound basis for reorganization and renewal. The project therefore seeks financial assistance to implement the whole or even part of the recommendations as it has been seen that implementation can be phased over two or three years. This project includes the following: a) the provision of 15 base stations linking essential services (e.g., the main hospital, cable and wireles, the airport, the seaport) and control points (Prime Minister's office, Ministries of Health, Works, etc.); b) a system linking sixteen centers for the collection of information and the dissemination of instruments and including provision for mobiles, repeaters, extension control units and aerials for repeaters.

IV. Actions to be taken by the country to enhance this project:

Government's telecommunication engineering and technician staff will assist with installation and be responsible for maintenance of the system, given the necessary training if any is required.

V. Justification for bilateral, regional, or international support of the project:

Other pressing commitments render this project, perhaps because of the element of chance where there has been no major disaster for twenty-five years, to be one of those which finds itself postponed from year to year. Yet the costs of rehabilitation and reconstruction will certainly be higher than the costs of this project.

VI. External financial assistance/technical assistance:

Part A: Approximately US$ 165,000

Part B: Approximately US$ 485,000

VII. Designation of Agency responsible for carrying out the project:

C.E.R.O. (In Prime Minister's Office) assisted by the Ministry of Communications and Works.

Telecommunications System
Central Emergency Relief Organization
Barbados

The Central Emergency Relief Organization in Barbados relies on the Police Telecommunications system when, as is to be expected in a national disaster, normal telephone systems break down. This system was the obvious choice, for a number of reasons: a) this system links some 16 points throughout the island, bringing information from outside into headquarters and passing instructions from headquarters to the outside units; b) it is a system which is in constant and daily use; and c) the Police department provides maintenance services for the system.

The telecommunications equipment being used by the Police Department was purchased twenty-seven years ago, and is now sadly out-moded. The department's telecommunications network comprises the following services: a) a fixed station service linking 15 Police Stations throughout the island with the Central Station; b) a mobile service linking radio-equipped operational vehicles, one launch and two speed boats with the Police Headquarters Conrol Room; c) a VHF link connecting the Control Room with the Signal Station at the Harbor, the Baggage Warehouse and the tugs in the Bridgetown Port; and d) a link in the Control Room which provides a means of communication between the local Police Force and forces in some of the neighboring islands in the Caribbean region.

A number of problems have been encountered with the Police System over the past few years: a) the equipment operates on the AM frequency, and since very few manufacturers are still making such equipment, parts are hard to obtain; b) the system is susceptible to noises and is vulnerable to interference, particularly from the television station; c) the range is very limited; and d) the system is most insecure, for messages can be picked up with almost any simple instrument.

CERO depends in addition on a Duplex System using VHF Radio-telephone equipment which was installed twenty-one years ago, and linked certain essential service and control points with Police Headquarters (Government Headquarters, Barbados Defense Force, the Q.E.H., Cable & Wireless, etc.). For the last five years this system has been inoperable and totally unserviceable.

The importance of an efficient and secure system of telecommunications cannot be over-emphasized. It is therefore recommended that the existing equipment should be replaced. The absence of the additional CERO system poses a very serious problem in the event of any large-scale disaster. Some Radio Hams have volunteered (if personal circumstances allow) to man certain key points in the event of a disaster; this of course is not a reliable arrangement.

Information on available equipment had been obtained from local agents, but it was considered important that a disinterested opinion be sought. In this regard, assistance came from the International Telecommunications Union, and two experts were able to visit in turn in September and October, 1979, and to advise on the best type of equipment for our particular needs.

The cost of this equipment as estimated by the ITU advisers in late 1979 totals $972,000 for the main Police system and $325,000 for the CERO special addition. It would be possible to replace the Police equipment in three phases, but the CERO equipment would have to be replaced all at once.

The following table gives a summary of the required equipment and also suggests how its purchase could be phased over a two or three-year period:

Equipment	Total Cost	Phase I Hdqtrs. Division	Phase II Northern Division	Phase III Southern Division
	$	$	$	$
CERO				
15 Stations	325,000		CANNOT BE PHASED	
Police				
15 Stations	360,000	120,000	120,000	120,000
120 Mobiles	288,000	96,000	96,000	96,000
2 Repeaters	120,000	60,000	60,000	
2 Repeaters Headquarters	120,000	60,000	60,000	
Extension Control Unit	48,000	24,000	24,000	
10 Aerials for Repeaters	36,000	18,000	18,000	
TOTAL	972,000	378,000	378,000	216,000

Title: Improvement of Radio Belize AM Transmission System

Description of Need:

Belize is served by a single radio station which is operated and maintained by the Government. The station, known as Radio Belize, transmits both in the AM and FM bands.

The FM transmission has only recently been commissioned and has a limited range of about 45 miles. Surveys made after recent hurricane experiences have indicated that reception of the AM transmission was generally poor countrywide. In some areas reception was not possible. The main cause for the poor reception was cited as deterioration over the years of the main transmitter. The main transmitter, which is located in Belize City, was originally rated with a 20 kW transmitting power. However, present output power is less than 9 kW.

Radio Belize is the primary medium used by the Central Emergency Organization to advise and warn the public of impending disaster. Also residents of border towns and villages in southern Mexico and northern Honduras and the Bay Islands monitor Radio Belize for the latest advisory and bulletin on storms in the northwest Caribbean.

An improved Radio Belize AM transmission would significantly enhance its usefulness to the regional community in the northwest Caribbean during the threat of severe storms.

Description of Project:

The proposed project is designed to improve the countrywide reception of Radio Belize transmissions during day and night. To achieve this capability it is proposed to install a 20 kW main transmitter in Belize City and two auxiliary 10 kW transmitters. One of the auxillary stations will be located in the north of the country and the other in the south.

The northern auxillary station would meet the needs of northern Belize and residents of border towns and villages in southern Mexico. The southern station would meet the needs of southern Belize and residents in the Bay Islands and north coast of Honduras.

Actions to be taken by Belize to enhance this project:

The Belize Government will provide the personnel and other works necessary to install and maintain the systems. It will also be responsible for all other local and recurrent operational expenditures.

Justification of Regional and International Support:

The Belize Weather Bureau, in co-operation with the National Weather Service of the United States of America, is responsible for broadcasting daily marine weather reports and forecasts on the MARINE BAND. In the event of severe weather development in the northwest, and southwest

Caribbean regular bulletins and advisories are also broadcast. The Marine Broadcast is a special service provided for the International and Regional marine community.

The project would provide a reliable back-up system as well as an alternative to the Marine Broadcast system. Regional and International support would therefore help in the establishment of a system through which the International and Regional marine community could be advised and warned of impending disaster.

External financial/technical assistance requirements:

Financial assistance will be required for the procurement of the transmitters. Technical assistance may also be necessary during the installation. The total estimated cost of the project is US$ 200,000.

Designation of the Agency responsible for carrying out the project:

To be determined.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications Chairman - Sir Carlisle Burton

I. Title - Radio Telecommunications Network for Dominica

II. Description of need or problem:

Dominica was devastated by Hurricane "David" and "Frederic" in August, 1979. Sadly lacking at the time was an effective radio telecommunications network capable of collecting weather information and disseminating this information to the general public so that safety precautions could be taken to secure life and property, to collect valuable relief suppliers for storage and generally to mitigate the effects of the disaster.

Also lacking was a system linking the Emergency operations center to other emergency centers throughout the country to keep the population aware of developments with regard to relief measures being taken to avoid panic and set minds at peace.

There is need to set up a communications network to collect and disseminate information on weather patterns and disasters throughout the country with a link between the EOC and a regional telecommunication disaster network.

III. Description of project and objectives:

The project seeks to set up the nucleus of a communication system to assess, collate, coordinate and disseminate information to selected emergency centers throughout the country prior to, throughout and following a disaster. The network will be linked to the Defense Force and to the Fire and Ambulance services which are responsible for rescue work, to the health service and to meteorological stations and the airport at Melville Hall.

The equipment required should be capable of transmitting on 6 channels or be tunable over a fixed spectrum and be operational on both 12V DC and 220V AC. Suitable generators should be supplied to power the equipment.

The system contemplated is a network of HF transceivers to be linked with a network of VHF transceivers for internal use.

A survey will need to be undertaken to determine the type and quality of equipment required and the method of development of the network.

IV. Actions to be taken by the country to enhance this project:

Office accomodation, secretarial services and transportation while on duty will be supplied to Technical Assistance personnel.

A local counterpart will be provided for the leader of the TA team.

V. Justification for bilateral, regional, or international support of the project:

Recent experiences in the region have shown the need for effective communication systems in dealing with disasters.

VI. External financial assistance/technical assistance:

1. Technical expertise in surveying, assessing, and designing network.
2. Training of local personnel in operation of network.
3. Training of local personnel in maintenance of equipment.
4. Purchase of equipment and spare parts (initially).

VII. Designation of Agency responsible for carrying out the project:

Ministry responsible for communications.

I. Title: Development of an Adequate Disaster Communication System for Jamaica Including Provisions of Equipment

II. Justification:

Recent experience has exposed weaknesses in the existing internal communication network and there is need to review the system against potential disaster scenarios. Rapid and efficent communication is essential for optimal disaster operation co-ordination and the need exists for a national system designed to withstand the types of disaster likely to occur in the country and maintain local and international communication in the emergency period.

The National Plan will require co-ordination between a National Emergency operations center and Satellite Centers operating in outlying areas as well as co-ordination of field operations; the existing systems will require review and upgrading to meet the disaster situations.

III. Project Description/Objectives:

The project will take the form of two phases, Phase I being a survey of existing facilities and resources by an expert in Disaster Communications and the preparation of a report and development plan incorporating the design of a system appropriate to the national needs.

Phase II will be the implementation phase and should include physical installation of the appropriate material as well as training in operations and maintenance procedures.

IV. Country Inputs:

The technical expert(s) involved in the survey will be supported by local telecommunications staff. It is anticipated that the local Red Cross organization who now co-ordinate the non-government radio system will be involved in this exercise.

V. External Inputs:

Technical expert(s) for a period of 4 weeks. The expert should have disaster communication experience.

VI. Justification for External Support/Interest:

Rapid restoration of external communication links is vital to mobilising disaster assistance and the possible evolution of a Caribbean region disaster communication network in the future gives this project sure international/regional impact.

VII. Responsible Agency:

Office of Disaster Preparedness working in concert with the National Red Cross.

BACK-UP EMERGENCY COMMUNICATIONS EQUIPMENT AND
ESTIMATED COSTS

4 VHF Transmitters complete with Antennas and 100 ft. Cable 15 to 25 Watts A.M. 75 MHZ Simplex	$2000.00
4 VHF Mobile Transmitters complete with Antenna and Cable 15 to 25 Watts A.M. 75 MHZ Simplex	1800.00
15 VHF Antennas cut for 75 MHZ complete with 100 ft. Coaxial Cable	400.00
4 Amateur Radio Sets A.M. SSB 150 Watts	5000.00
2 Two Meter Base Sets 25 Watts complete	2500.00
12 Two Meter Mobile sets complete	1200.00
2 Unipole Antennas complete with 150 ft Coaxial Feeder Cable 3 heavy duty for 10 KW. One Antenna cut for 660KCS; one cut for 840 KCS	2000.00
4 Generators 220 Volts A.C. 50 CPS complete with 800 ft. Cable	2000.00
2 Base stations CB 50 Watts 4 Channels 220 Volts	600.00
4 Mobile CB Sets 12 Watts 12 Volts 40 Channels	400.00
Total Cost of Back-Up Equipment	17900.00
Contingencies	2100.00
	20,000.00

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications Chairman - Carlisle Burton

I. Title - Emergency Backup Telecommunications Equipment for St. Lucia

II. Description of need or problem:

A survey of the existing communications system (network) has shown the need to have backup equipment in order to ensure uninterrupted communications locally and regionally in the event of a disaster.

In the event of a hurricane the weakest link in the communications service is the antennas system, which can normally stand winds up to 60 m.p.h.

Although the broadcasting antennas for the broadcasting stations in St. Lucia can withstand winds of 130 m.p.h., the loss of these antennas would break that most important link between the public and the Central Emergency Committee.

III. Description of project and objectives:

The project seeks to return the service promptly in the event it is damaged by a disaster by having available the necessary back-up equipment details of which and estimated costs are attached.

VHF transmitting equipment is to cope with areas which will be declared as danger zones and therefore radio communications will be required.

Amateur equipment will be as backup by the amateur radio club to coordinate Red Cross, St. John Ambulance and other voluntary organizations.

C.B. equipment will provide coordination of all C.B. operators used in fieldwork.

IV. Actions to be taken by the country to enhance this project:

The Central Emergency Organization in Prime Minister's office will coordinate the details of implementation and will be supported by the Ministry of Communications and Works and exercise supervision of activities of the amateur radio club and CB'ers.

V. Justification of bilateral, regional, or international support of the project:

The other commitments of governments do not permit expenditure on this emergency at this time. Yet it could be needed at any minute.

VI. External financial assistance/technical assistance:

Approximate cost $20,000.

VII. Designation of Agency responsible for carrying out the project:

The Office of the Prime Minister.

Drafted by: Stanislaus James

II. Meteorology
Summary Statement and Comments

Essentially this project is based on the study made by the World Meteorological Organization entitled "Improvement of the Hurricane Warning System for Central America and the Caribbean". Participating governments are asked to review the project to determine its special implications for them and to convey reactions to it (if that has not already been done) to the World Meteorological Organization. That communication would be in addition to the response which reflects country reaction to this group of projects. The Dominican Republic meeting working group that produced this project recommends bilateral, regional and international support for this many faceted program.

In addition to the regional project, an interesting proposal for the "Improvement of the Dominican Republic National Meteorological Service to Reduce the Effects of Tropical Cyclones" was also submitted.

Dalton

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Meteorology Chairman - Kenrick Leslie

I. Title: Regional Project for the Improvement of the Hurricane Warning System in the Caribbean

II. Description of need or problem:

A global average of some 80 to 100 tropical cyclones annually cause an average of 20,000 deaths and economic damage estimated to be on the order of US $6,000 million. In small, vulnerable, developing countries whose economies are based on agriculture, the damage inflicted by a single tropical cyclone can set back growth of the national economy by several years. Population growth and movement, escalating reconstruction costs and other factors tend to increase vulnerability. The application of science and technology to improve the capability of the participating countries to protect their population and property from hurricanes is therefore a direct contribution to their economic development, and among their priority development objectives.

This project addresses the problems of increasing and developing the cooperative efforts of the countries in the Caribbean to comply with their obligations in preparing and disseminating meteorological forecasts and warnings on all tropical cyclones which affect the region. To this end special emphasis has to be placed on the most important requirements for the implementation of an effective hurricane warning system, including the necessary telecommunications and other facilities as agreed by Regional Association IV (RA-IV) of the World Meteorological Organization (WMO) and set out in the RA-IV Hurricane Committee's Technical Plan.

III. Description of project and objectives:

The objectives of the project are based on the principles that 1) the services in the area should be properly developed and provided with adequate staff and equipment to meet their responsibilities; and 2) the observing, telecommunication and data processing systems of the World Weather Watch (WWW) will be fully implemented by all members in the hurricane area. For details, see attached.

IV. Actions to be taken by the country to enhance this project:

Each government will provide, in relation to the project activities in its country, all buildings, constructions, office facilities, secretarial assistance, servicing and maintenance of instruments and equipment.

The project will have a duration of two to three years.

The following activities will be carried out during the project in order to achieve the immediate objectives:

I. Establishment and operation of:

a. Rawinsonde station at La Bajada, Cuba;

b. Special tropical cyclone observing stations for reporting selected parameters at: Jeremie, Haiti; Negril Point, Jamaica; Cayman Brac, Cayman Island;

c. Storm-tracking radar in the Dominican Republic;

d. Automatic weather station at Half Moon Caye, Belize.

II. Improvement of:

a. The storm-tracking radar in Barbados, mainly by the provision of consultant sevices in radar meteorology and a digitizer and 35 mm film reader/printer.

b. Storm-surge prediction in the Caribbean including the provision of consultant services and installation of 16 tide-gauge stations.

c. Communications between warning centres and other centres or territories for which they have responsibilities of provision of hurricane warnings.

SSB links are required as follows:

i. Coolidge, Antigua, with Anguilla, Barbuda, British Virgin Islands, Montserrat, Nevis, St. Kitts;
One SSB of 400 W. in Coolidge (1) and SSBs of 150 W in the six other locations.

ii. Nassau, Bahamas, with Grand Turk; SSBs of 400 W in both places.

iii. Grantley Adams, Barbados, with Dominica, St. Lucia, and St. Vincent;
One SSB of 400 W in Grantley Adams and SSBs of 150 W in the three other places.

iv. Norman Manley, Jamaica, with Grand-Cayman; SSBs of 400 W in both places.

v. Piarco, Trinidad, with Grenada;
One SSB of 400 W in Piarco and one SSB of 150 W in Grenada.

vi. San Juan, Puerto Rico, with Haiti and Netherlands Antilles;
SSBs of 400 W in the three places.

Emergency generators (for eight stations) are also required.

d. Telecommunications facilities as necessary to improve national data collection. SSAs of 150 W in the Dominican Republic, and Belize (two in each country) and 4 SSBs of 150 W in the Central American Isthmus.

III. Assistance, where required, for provision of direct contact between warning centres and forecast centres issuing tropical cyclone advisories for regional dissemination. Covered, as regards equipment, under item II(c) above for those warning centres.

IV. Strengthening of national and sub-regional workshops and facilities for maintenance and calibration of meteorological and hydrological instruments.

V. Training

In addition to the on-the-job training to be given by international experts under each of the activities mentioned above, the folowing training projects are envisaged:

a) Seminar on operational techniques for short-range forecasting of hurricane movement and intensity changes.

b) Seminar on storm-surge prediction.

c) Workshop on radar observations of hurricanes and incipient hurricanes and

d) Workshop on the maintenance of APT/WEFAX, facsimile and basic telecommunications equipment.

The programme for training abroad under fellowships should include:

i) 9 short-duration awards for one forecaster from each hurricane warning centre (in Antigua, Bahamas, Barbados, Belize, Cuba, Dominican Republic, Jamaica, and Trinidad and Tobago) tenable at the RMC, Miami.

ii) 6 fellowships of 6 months' duration each for training in radar maintenance and operation.

iii) 6 fellowships of 9 months' duration each in the maintenance of meteorological and hydrological instruments

Project personnel

Expert in electronic meteorological equipment

Expert services are required for the establishment of rawinsonde equipment and for the inspection and improvement of existing upper-air observing installations.

The expert should provide guidance in the organization of centres for the repair, maintenance, testing and calibration of electronic meteorological equipment, including 10-cm. weather radars; and train local personnel in the operation, repair and maintenance of the equipment. A total duration of 24 months is envisaged in order to allow for a 3-month stay in each new station to be established (1 month for site inspection and preparation of specification, 1 month to supervise installation and train local staff and 1 month one year later for inspection and additional training).

Expert in meteorological instruments

Expert services are required for the establishment of meteorological stations, installation of conventional instruments, to survey and make recommendations regarding the strengthening of workshops and facilities for maintenance, repair and calibration of meteorological instruments; and train local personnel in these activities. A total duration of 24 months is envisaged for site inspection and preparation of equipment specifications, supervision of installation and survey of workshop facilities in the various countries.

Expert in meteorological telecommunications

Expert services are required to assist in implementing recommended telecommunication facilities and services by providing the necessary technical assistance (installations, operation and maintenance of equipment) and to provide training for the personnel responsible for the operation and maintenance of telecommunications equipment. A duration of 18 months is envisaged for this post.

Consultant services (missions of less than six months) are envisaged in the following fields of specialization: radar meteorology, meteorological radars (installation, maintenance), hurricane forecasting, storm surge observation (including instrumentation). In addition to operational duties (e.g., prediction and warning) in their respective fields, these consultants will assist the international experts and the national instructors in the training of local personnel through on-the-job training and under the Seminars and Workshops outlined under the heading "Training".

Training	Estimated cost in US$
a) Seminar on the operational techniques for short-range forecasting of hurricane movement and intensity changes	30,000
b) Seminar on storm surge prediction	30,000
c) Working on radar observations of hurricanes and incipient hurricanes	30,000
d) Workshops on the maintenance of APT/WEFAX, facsimile and basic telecommunications equipment	30,000
e) 16 fellowships of 4 weeks' duration each at the RMC (1200 stipend + 450 travel each)	26,400
f) 6 fellowships of 6 months' duration each in radar maintenance and operation (6,000 stipend + 450 travel each)	38,700
g) 6 fellowships of 9 months' duration each in the maintenance of meteorological instruments (7,650 stipend + 450 travel each)	48,600
	233,700

EQUIPMENT

The following equipment is required to implement activities as detailed above.

	Description	Quantity	Unit Cost	Total Cost
I.(a) (b)	4 Rawinsonde stations) 2 Radiowind stations (wind finding radars))	6	150,000	900,000
I.(c)	Stations for reporting selected parameters		10,400	
	barometer	6	700	4,200
	barographs	6	400	2,400
	anemographs	6	7,000	42,000
	SSB	6	2,300	13,800
I.(d)	Storm tracking radars	2	400,000	800,000
I.(e)	APT/WEFAX	1	60,000	60,000
II.(a)	Digitizer	1	50,000	50,000
	35 mm. film reader/printer	1	7,000	7,000
II.(b)	Tide-gauge stations	15	3,000	45,000
II.(c)	SSBs	27	2,300	62,100
	Linear amplifiers	9	5,000	45,000
	Emergency generators	8	500	4,000
III.	Covered under II.(c)	-	-	-
IV.	Workshop equipment	-	-	100,000
	Spare parts and consumables for above listed equipment 10% of estimated cost			213,500
	Equipment TOTAL			2,349,000

V. Justification for bilateral, regional, or international support of the project:

The foundation of an effective hurricane monitoring and forecasting system rests on the availability of observational data from a regional network of observing stations and an efficient telecommunications system for the exchange of these data. The project consists of the installation of equipment nationally for the improvement of regional observing and telecommunication systems, together with the training of personnel and related expert services. By its nature the project warrants bilateral, regional, or international support.

VI. External financial assistance/technical assistance: See section III.

VII. Designation of Agency responsible for carrying out the project:

Executing Agency: World Meteorological Organization.

Drafted by: Meteorology Committee

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Meteorology Chairman - Kenrick Leslie

I. Title - Improvement of the Dominican Republic's National Meteorological Service to Reduce the Effects of Tropical Cyclones

II. Description of need or problem:

The Dominican Republic is a country of valleys and mountains constantly exposed to devastating tropical storms, river floods and inundations. This project is designed to meet the needs of the Meteorological Service of the Dominican Republic in order to provide a more effective warning and forecasting system.

III. Description of project and objectives:

The project objectives may be divided into three broad areas: 1) the improvement of the basic meteorological observing system; 2) the establishment of a real-time flood forecasting system; and 3) the establishment of an effective country-wide meteorological telecommunication system. The activities associated with each of these objectives are listed below.

Communications System

1. Four repeating stations with an output power of 100 W to cover the whole territory.
2. Twenty base stations with an output of 30 to 45 W to cover all our synoptic stations.
3. Ten portable units with an output of 5 W.
4. A single side band station with a power output of 1 kW; with 4 frequencies of 3 to 9 MHz in the band, in order to link the Central station as an alternative system, with our national network of stations of SSB and with the two emergency frequencies that the NOAA office in Miami uses for several islands in the Caribbean.
5. A two way micro-wave repeater with an output of 1 W in the 6000 MHz band to connect the central office with the Forecasting Center at the Airport. This connection would guarantee us the link of facisimile, satellite pictures, telephones and teletypes.
6. A complete FM station, including an antenna with a power of 10 kW, that would guarantee issuance of bulletins about hurricane notices, directed to the most populous places in our territory, especially the south coast of the Dominican Republic. With this transmitter, public bulletins originating from our Central Office would be linked to the rest of the commercial and broadcasting stations in the country. The antenna should be designed to resist winds of up to 250 Kms. per hour.

Basic Meteorological Observing System

1. One S Band radar with integrated digital video processor with steps up to 250 miles.
2. One repeating screen (CRT) with micro-wave repeaters for use with radar system.
3. Ten portable automatic meteorological stations.

Hydrological System

1. Three hydrometric teletransmission stations.

V. Justification for bilateral, regional, or international support of the project:

The project is designed to improve the capability of the national meteorological service to provide hurricane forecasts and warnings and to improve the flood forecasting system.

The provision of the radar system is part of the regional project for the improvement of the hurricane warning system.

The remainder of the project is national in character and would qualify for bilateral and international support.

VI. External financial/technical assistance:

Because of the scale and urgency of the project local funds would not be available. Hence, external funding would be necessary. The level of funding required is US$ 1.08 million, details of which are attached.

VII. Designation of Agency responsible for carrying out the project:

Department of Meteorology, Secretaria de Estado, De Agricultura.

Estimated Cost of Equipment for the Improvement of the Dominican Republic Meteorological Service

Radar "S" Band	US$	600,000.00
VHF Communications net		200,000.00
One SSB Station 1 kW HF Complete with Tower and Beam Antenna		25,000.00
Two way microwave link of 1 watt at 6,000 MHz		30,000.00
One Broadcasting Station FM, 10 kW including tower and antenna		100,000.00
Three hydrometric automatic telecommunication stations for flashflood		75,000.00
Ten mobil automatic weather stations		50,000.00
TOTAL		1,080,000.00

Drafted by: Meteorology Committee

III. National Disaster Planning
Summary Statement and Comments

The working group on national disaster planning developed 5 country projects (for Belize, Guyana, Haiti, Jamaica and Trinidad/Tobago) calling for either the review and upgrading of an existing plan or the preparation of a new plan. (Since the indispensability of a national disaster plan was not addressed to any degree at the Dominican Republic meeting, it is suggested that all participating governments might wish to consider joining a Caribbean-wide effort in this area.)

Fulfillment of these project requirements will take the form of short and longer term technical assistance by disaster experts in consultation with national agencies responsible for overall national disaster planning or with those having separate specialized agency roles within a master national plan.

No all-inclusive Caribbean regional plan was considered by this working group, although a regional project proposal was prepared by the Emergency Operations Center Working Group.

The United Nations Disaster Relief Office (UNDRO) submitted a proposal in which they assume responsibility for direction of disaster prevention and preparedness activities which might be developed (specific projects were not mentioned) for Antigua, Barbados, Dominica, Grenada, Montserrat, St. Kitts-Nevis-Anguilla, St. Lucia and St. Vincent. Unfortunately there was not time at the Dominican Republic meeting to explore with UNDRO the reasons for limiting preparedness activity to the Eastern Caribbean, especially in view of continuing regional interest in and progress being made on a pan-Caribbean effort. On the other hand, the idea of a Center for Eastern Caribbean Disaster Preparedness Coordination (perhaps as a subcenter in a broader pan-Caribbean program) may have merit. In any event, the question of the longer term organizational arrangement required by Caribbean disaster preparedness is so important an issue that it should not be pursued unilaterally by any one participating nation or organization, but rather be carefully thought out and evolved through the participation of a cross-section of countries and organizations.

This topic would provide an appropriate "centerpiece" at the next meeting of the ad hoc Caribbean Disaster Preparedness Planning Group.

A project for Trinidad and Tobago, entitled "Assistance in Disaster Preparedness", was submitted through UNDRO. It indicates implementation is to be carried out through the United Nations Development Planning Country Program Trust Fund and will require the short term services of disaster preparedness and legal experts.

Dalton

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

Program Area - Disaster Preparedness Chairman - Jean-Paul Levy

I. Title: Review and upgrading of the national disaster plan for Belize

II. Description of need or problem:

The geographical location of Belize and its topography make the country prone to meteorological conditions which account for many natural phenomena resulting in disasters. Statistics show that within the past 50 years, 27 tropical storms and hurricanes caused considerable damage in Belize. As recent as December 1979, the country experienced one of its worst floods.

The current emergency plan was developed to deal primarily with hurricane emergencies. The recent floods indicated this quite clearly. There is therefore an urgent need to broaden the scope of the plan to cope with all natural as well as man made (oil spills, aircraft crash, etc.) disasters.

III. Description of project and objectives:

i) Long-range objective : The long-range objective is to develop the capacity of Belize to prevent or mitigate the disastrous effects of natural phenomena and to cope with natural disasters which will occur as well as with such man-made events as oil spills, air crashes or large fires.

ii) Immediate objectives : The immediate objectives are to examine the country's present hurricane emergency plan with a view to upgrading it as a National Disaster Plan. From this may be prepared emergency plans for the various types of disaster - natural and man-made--which may occur in the country. At the same time, the project team will examine the need to strengthen the technical, statistical and administrative services required for the efficient planning and execution of activities related to disaster prevention, preparedness and relief and to train national personnel in these fields. If needed, it will also help in the formulation of other technical cooperation projects to promote disaster prevention, preparedness and relief.

IV. Actions to be taken by the country to enhance this project:

The Government of Belize will provide necessary local support for the successful implementation and execution of the project.

V. Justification for bilateral, regional, or international support of the project:

Belize lacks specialists in the field of disaster planning required for the project. Provision of regional/international experts is therefore a necessary factor if the project is to be successful.

In view of the frequency of occurence of hurricane and flood threats to Belize, any disaster plan developed could be tested for its efficiency and applicability to other countries in the region.

VI. External financial assistance/technical assistance:

External financial support will be necessary for the technical advisor(s) required to carry out the project. Also funds will be required in the area of training of personnel associated with the disaster planning unit.

VII. Designation of Agency responsible for carrying out the project:

The Central Emergency Organization, Office of the Premier, Belmopan

Drafted by: Belize

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Preparedness Planning Chairman - Jean-Paul Levy

I. Title: Preparation of National Disaster Plan

II. Description of need or problem:

Haiti is threatened by earthquakes, hurricanes, floods and drought. The number of Haitians threatened by disaster is in the millions. In the past, many towns were destroyed or damaged. In recent history hurricanes have caused damage in the years 1954, 1963, 1964 and 1966. Many people were killed, injured, or left homeless. Therefore, it is important for the Government of Haiti to develop a national disaster plan.

During the past 10 or 12 years the Government of Haiti depended upon the Haitian Red Cross for emergency relief operations. In fact, the Red Cross mandate specifies primary care and emergency relief. It cannot become involved at the government level in pre-disaster planning, disaster preparedness, and direction of government emergency relief operations. National planning should be realized by the entity which prepares the national plan related to development of the country.

III. Description of project and objectives:

Due to the impact of disaster upon the social and economic infrastructure, the national disaster plan will deal with all aspects involved in case of natural disasters.

1) Plan for the establishment of a national disaster coordination center with communications capabilities with the Ministries, the Red Cross and other agencies dealing with preventive measures, emergency relief and rehabilitation.

2) Provide guidelines for Ministries to follow and provide technical assistance in the preparation of plans at the Ministry level.

3) Prepare functional statements in collaboration with the Haitian Red Cross and other voluntary agencies as to how they relate to the national disaster plan.

4) Issue policy and procedures statements to maximize the effectiveness of bilateral, international and voluntary agencies' disaster assistance.

IV. Actions to be taken by the country to enhance this project:

1) Letter of intent from the government expressing a desire to start the project;

2) Provision of human resources to,

3) Issuance of adequate legislation related to the matter.

V. Justification for bilateral, regional, or international support of the project:

The governmental agencies which may play a role in national planning do not have sufficient experience for the preparation of a disaster plan. The project should have the benefit of best possible use of trained or experienced personnel.

VI. External financial assistance/technical assistance:

USAID and UNDRO have assigned disaster preparedness staff members to work in Haiti for short periods of time. We hope to have technical and financial assistance from all the donor agencies dealing with disasters.

. Consultant services for periodic visits by disaster planning and preparedness experts.

. National disaster preparedness seminar.

. Training abroad for professional personnel.

. Fellowships for specialization in disaster-related matters for staff of various Ministries.

. Assistance in the implementation of the plan. Priority should be given to the training of health personnel in disaster prone areas of the country and to stockpiling of essential drugs and equipment in these areas.

VII. Designation of Agency responsible for carrying out the project:

Ministry of Planning

Drafted by Price Pady

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

Program Area - Preparedness Planning Chairman - Jean-Paul Levy

I. Title: Preparation of a National Disaster Plan for Guyana

II. Description of need or problem:

Problem: No provisions currently exist for mobilizing the country's services in times of a disaster. While the individual organizations such as police, fire, ambulance, hospital, information, welfare, and engineering services are in a state of readiness to meet routine situations, there is a need for a National Plan to co-ordinate all the services in the event of a disaster.

III. Description of project and objectives:

The objective is to save life and property and to reduce human suffering.

The project is for the provision of resources to assist in drawing up the National Plan, educating service units in its use and putting it into practice.

IV. Actions to be taken by the country to enhance this project:

Government will designate a service officer to co-ordinate and assist as necessary in implementing the plan and would make available all necessary personnel when required.

V. Justification for bilateral, regional, or international support of the project:

In past years, governments in this region have not been familiar with planning for disaster on a national basis. Therefore, officers concerned with disaster operations nave not had the opportunity of learning from those who may have had personal experience of disaster planning on a national scale. External support for this would therefore be appreciated.

VI. External financial assistance/technical assistance:

Government does not have the financial resources to meet the cost of an expert in this field and any equipment which might be required.

The overall cost can only be determined with appropriate advice, but it is anticipated that it would not exceed $50,000 U.S.

VII. Designation of Agency responsible for carrying out the project:

Ministry of Home Affairs

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

Program Area - Preparedness Planning Chairman - Jean-Paul Levy

I. Title: Preparation of A National Disaster Plan for Jamaica

II. Description of need or problem:

Problem: Jamaica has suffered from a variety of natural disasters in the past - earthquakes, hurricanes, floods, etc. - and remains vulnerable to all these threats. The recent concentration of population in urban areas has led to a change in the pattern of risk and the long hiatus since the last major disaster event (1907 for earthquakes, 1951 for hurricanes) has led to a relaxation of public awareness and preparedness measures and a deterioration in the national disaster management capacity.

In June 1979, the Island's Western Section experienced extreme rains and the consequent relief and recovery phase was severely hampered initially by lack of adequate Disaster Planning and Contingency measures. The Government as a consequence has formed an internal National Committee to address the problem of a National Preparedness Plan. Assistance in the form of a review by UNDRO and USAID/OFDA personnel was sought and the recommendation of the experts was that a National Office of Disaster Preparedness and Emergency Relief Co-ordination should be formed.

This office will be on stream by 1st June and the assistance being sought is required to enhance the nation's capability to prepare for, respond to and effectively cope with disasters, thereby minimising human suffering and loss of life and property.

III. Description of project and objectives:

To identify National and Local disaster risks and history.

To identify disaster-related organizations and systems and to ensure that the systems are appropriate to the risk level.

To design systems for dissemination of disaster related information at individual, community and policy level.

It is envisaged that the project will take the form of the creation of a team of nationals and consultants who will jointly review the disaster potential and seek to create systems, prearranged plans of action and co-ordination, to anticipate local disaster conditions. The National Plan will identify many other areas requiring positive action and lead to the implementation of preparedness related projects.

The accompanying list of projects has been prioritized at this time and the Jamaican Disaster Preparedness Committee has identified them as areas of weakness requiring immediate corrective action.

IV. Actions to be taken by the country to enhance this project:

The Government of Jamaica will provide the following support:

(a) The organizational framework under the Office of Disaster Preparedness (ODP) consisting, by June 1980, of a Director and four (4) Senior Officials.

(b) Office Accommodation appropriate to the operation of a National Emergency Operation Center and support facilities.

(c) Manpower in both the ODP and the Government Sector through collaboration with the Voluntary Agencies and Private Sector additional manpower requirements will be available but can only be specified following detailed project design.

(d) Cost of Jamaican Government support for the first year's operation is estimated to be J$250,000 in the first instance.

V. Justification for bilateral, regional, or international support of the project:

The weakened state of the Jamaican Disaster Management capability can be rapidly upgraded only through contribution from agencies/persons with recent up-to-date disaster experience. The long reprieve from significant disaster events has left Jamaica short of experienced disaster specialists. The desired format would be for nationals to participate in the Disaster Planning effort working collaboratively with regional/international experts.

The project may have indirect regional benefits and interest as Jamaica has fairly complex topographic and geologic conditions and techniques and systems found applicable here may be capable of application elsewhere in the Caribbean.

VI. External financial assistance/technical assistance:

(a) Bilateral Aid is being sought in the form initially of technical advisors who would work out training and equipment requirements. (See related project proposals).

(b) Training will be required for disaster planning officers, scientists and public officials who will be required to participate in Emergency Operations.

VII. Designation of Agency responsible for carrying out the project:

The Office of Disaster Planning (ODP) of the Ministry of Local Government and Community Development will be the government agency having primary responsibility for contact with donors, project design and implementation and co-ordination and liaison with other national entities. Arrangements have been made for the voluntary agencies and National Red Cross Society to participate through the National Disaster Committee.

Project of the Government of Trinidad and Tobago

Title: Assistance in disaster preparedness.

Duration: 3 months.

Governmental Co-operating Agnecy: Ministry of National Security.

Executing Agency: United Nations (UNDRO).

Date of submission: Starting date: October 1980

Government Contribution: $3,500 Country Program Trust Fund: $20,000

APPROVED _____ _____
on behalf of the Government of Trinidad and Tobago (title and signature) Date

APPROVED _____ _____
on behalf of the Executing Agency (signature) Date

APPROVED _____ _____
on behalf of UNDP (signature) Date