
Caribbean Disaster Preparedness Projects Conference

**Proceedings, Project Proposals
and Collected Papers**

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**Santo Domingo
Dominican Republic
May 19-23, 1980**

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PROCEEDINGS
OF THE
CARIBBEAN DISASTER PREPAREDNESS
PROJECTS CONFERENCE

Including Plenary Summaries, Project
Proposals and Collected Conference Papers

Santo Domingo,
Dominican Republic
May 19-23, 1980

TABLE OF CONTENTS

- I. Introduction
 - Purpose of the conference
 - Organizations involved in its planning and execution
 - Content of project planning and plenary sessions
 - Contents of the report
 - Projected post-conference actions
- II. Agenda
- III. Chairman's Remarks and Text of Speech by President Guzman
- IV. Plenary Session Summaries
 - A. International Support Organizations
 - Overview: points discussed in presentations
 - Summaries of donor presentations
 - Highlights of questions asked of donors
 - B. Status of Disaster Preparedness in the Caribbean
 - Team visits/self-audits
 - Analysis of self-audits
 - plans, EOC's, communications
 - needs: specialized plans, resource inventories, public awareness programs, shift in emphasis from relief to preparedness, linkage between disaster preparedness and economic development
 - C. Review of Disaster Preparedness Programs
 - Regional vs. country-level or bilateral
 - EOC
 - Communications
 - Meteorology
 - Planning
 - Public Awareness
 - Seismology
 - Non-Governmental Organizations
 - First Aid
 - Public Health
 - Special Country Projects

D. Country Preparedness Activities

Barbados - telecommunications

Belize - communications, post-disaster planning, flood forecasting, strengthening hurricane system

Caymans - needs identification

Jamaica - EOC, planning, risk analysis, training, equipment survey, needs identification

Montserrat - needs identification

Turks and Caicos - fresh water supply; hurricane shelters

US Virgins - emergency preparedness program

Haiti - planning, training, water supply

Dominican Republic - health, training, equipment, communications

St. Lucia - EOC, water supply, communications

V. Revised Texts of Preparedness Projects

VI. Plenary: Review of conference accomplishments

Committee Reports

Summation: Follow-up Activities

VII. Collected conference papers

Texts of presentations by support organizations

Program supporting papers

Review of Caribbean preparedness; self-audits chart

VIII. List of Participants

INTRODUCTION

The Caribbean Disaster Preparedness Projects Conference was convened in Santo Domingo, Dominican Republic, May 19 through 23, 1980, at the invitation of the Dominican government. Sponsored by the Caribbean Disaster Preparedness Planning Group, which comprises the Caribbean Community Secretariat, the Pan American Health Organization, the League of Red Cross Societies, the Office of U.S. Foreign Disaster Assistance, the American Council of Voluntary Agencies for Foreign Service, the Office of the United Nations Disaster Relief Coordinator, and representatives of a number of Caribbean countries, the conference was organized by the Office of U.S. Foreign Disaster Assistance. With the aim of advancing the recommendations of the 1979 St. Lucia Seminar, the conference focussed on outlining feasible disaster preparedness projects, both regional and country-level and determining the priority for executing them. Additional sessions provided information on the current level of disaster preparedness in the Caribbean region, recent preparedness activities of the countries and organizations present, and the potential assistance available from bilateral and international support organizations. The countries hardest hit by Hurricanes David and Frederic, Dominica and the Dominican Republic, reviewed their relief and reconstruction activities.

This report of the conference proceedings summarizes the content of the plenary sessions and presents projects for government and donor examination. Occasional papers prepared for the conference are also included.

The Planning Group hopes to initiate project activities on the most urgent level before the close of 1980 and, ideally, to have some preparedness impact on this hurricane season. Prompt reactions to these projects on the part of Caribbean governments and the support organizations are essential to their early implementation. The lessons of the 1979 hurricane season are clear; the outcome of the 1980 season may depend in part on the response of disaster planners to the findings of this Projects Conference.

5/8/80

CARIBBEAN DISASTER PREPAREDNESS PROJECTS CONFERENCE

	Sunday May 18	Monday May 19	Tuesday May 20	Wednesday May 21	Thursday May 22	Friday May 23
7:30						
8:00		Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
8:30						
9:00		Board bus for Central Bank				
9:30		Conference Objectives and Procedures	Review of Disaster Preparedness Programs	Country Presentations of Preparedness Activities	Continuation of Project Development Committees Activity	Review Accomplishments of Conference
10:00		Welcome by President Guzman at Central Bank	1. Planning 2. Emerg Oper Cntr 3. Communications			
10:30						
11:00			Coffee Break		Coffee Break	
11:30		Introduction of Delegates	4. Meteorology 5. Seismology	Coffee Break Continue with Country Presentations		Concluding Ceremony
12:00						
12:30		Bus to Hotel		Lunch	Lunch	Lunch
1:00						
1:30		Lunch	Lunch			
2:00				Project Development Committees	Presentation of Draft Projects by Committee Chairmen and Group discussion in Plenary	Field Trip--
2:30				(preparation of project proposals)		"The Effects of Hurricanes David and Frederick in the Dominican Republic"
3:00		The Role of International Support Organizations	Disaster Preparedness Programs Continued		Coffee Break	
3:30			6. Distr With Care 7. First Aid Trng 8. Public Awareness			
4:00			Coffee break	Coffee Break	Continuation of above	D.R. Office of Civil Defense
4:30		Coffee Break				
5:00		Status of Disaster Preparedness in the Caribbean	9. Non-governmental & Voluntary Orgs Disaster Prep Activities	Continuation of Project Development Committees Activity	Coffee Break	
5:30					Continuation of above	
6:00						
6:30		Guidance for Program Area Chairmen				
7:00						
7:30	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner

Breakfast will also be served on Saturday, May 24, before departure of delegates

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8:30 Cultural Show by
Govt. of Dominican
Republic Tourism Secretariat

8:30-9:30 Slide Show and
Talk (Hurricanes David
and Frederick in Dominica)

8:00-11:00 PM--Project
Refinement

CHAIRMAN'S REMARKS

William Dalton, Meeting Chairman, reviewed the current sequence of activities, which, for the past two years, have been working toward the design and implementation of a comprehensive disaster preparedness and prevention program for all the islands of the Caribbean. He described the results of the previous year's meeting in St. Lucia, giving particular attention to the large number of recommendations developed, and outlined the preparedness objectives agreed to in St. Lucia and the work done over the past year toward the realization of those objectives. Mr. Dalton proceeded to describe the hopes of the ad hoc Caribbean Disaster Preparedness Planning Group for the current meeting and to explain how the agenda was designed to produce priority project descriptions with the greatest opportunity being provided for the contribution of views by all in attendance. Looking to the future, he outlined the plan, once it was clear that there was sufficient interest on the part of participating governments, to take projects to the international community of donor nations and organizations for their consideration of technical, financial and material support.

In closing, he agreed that the Office of U.S. Foreign Disaster Assistance would continue to serve, on an interim basis, in a planning/information exchange center role, until more permanent arrangements can be made.

SUMMARY OF PRESIDENT'S TEXT

The Honorable Antonio Guzman, President of the Dominican Republic, opened the Caribbean Disaster Preparedness Conference, welcoming all participants. He noted the vulnerability of the Caribbean Region to natural disasters and specifically encouraged participants to review the experience of the Dominican Republic in the case of Hurricane David. Given the frequency of natural disasters in the Caribbean region, President Guzman urged the establishment of a permanent U.N. contingency fund for the region. This resource could be designated for both preparedness and relief activities. President Guzman closed his introduction with a statement of appreciation for the U.N. and government aid provided during and after Hurricane David. He expressed the hope that all participants would have a pleasant stay in the Dominican Republic and that the conference would prove successful.

(The Spanish text of his speech follows.)

Distinguidos visitantes;
Autoridades Civiles y Militares;
Señoras;
Señores:

En nombre del Pueblo Dominicano y del Gobierno que me honro en presidir, doy la más cordial bienvenida a todos los participantes en la importante conferencia sobre Proyectos de Preparación para Socorro en el Caribe, que se inicia con esta sesión inaugural en la Ciudad Primada de América.

Al proponer nuestro territorio como sede de este evento, lo hicimos convencidos de que podíamos ofrecer al mundo, y en especial a esta región del Caribe, como aporte positivo a los objetivos de esta reunión, la experiencia adquirida después del paso por nuestro País - del terrible Huracán David y la tormenta Federico, con su trágica secuela de inundaciones.

Las experiencias obtenidas de las labores de emergencia que se llevaron a cabo, a raíz de esos trágicos sucesos, y los esfuerzos desarrollados en los aciagos días que siguieron al paso de esos fenómenos naturales, deben ser una valiosa contribución para los países aquí representados.

Es decir, que el objetivo principal de la celebración de esta Conferencia, es asegurar un mejor y más efectivo auxilio para nuestros pueblos en casos similares a los que enfrentamos, todos los dominicanos, en el pasado reciente.

Consciente de los riesgos a que están expuestas las naciones, especialmente las que integran el Archipiélago de las Antillas, el Gobierno Dominicano sometió a la consideración de la Organización de las Naciones Unidas, y muy particularmente a la Oficina de las Naciones Unidas para el socorro en casos de desastre, (la creación de un fondo permanente que le permita auxiliar a las Islas del Caribe, en esas dramáticas contingencias.)

Esa iniciativa de mi Gobierno fue expuesta durante el Trigésimo - Cuarto Período Ordinario de Sesiones de la Asamblea General de la Organización Mundial.

Al proponerla formalmente al Secretario General de las Naciones Unidas, manifestamos que "Tenía por objeto especial no sólo llevar al ánimo de las comunidades que, como la nuestra, habitan ese extenso Archipiélago del Hemisferio Occidental, el sosiego que para ellas - representa en sus periódicas desventuras la solidaridad internacional, sino también canalizar, por vías más expeditas y eficaces, la acción que en estos casos de infortunios colectivos, suelen adoptar las Naciones Unidas".

Los recursos del fondo propuesto estarán destinados a:

- 1) Promover trabajos de investigación científica encaminados a encontrar medios de disolver, aminorar o desviar los huracanes, mediante la incorporación de proyectos de esta naturaleza en centros de vigilancia ciclónica ya existentes o en instituciones académicas-interesadas en el desarrollo del tema;
- 2) Auspiciar la elaboración de proyectos para que las construcciones estén dotadas de características que las preserven de los efectos demolidores de los vientos huracanados y de los efectos destructores de las inundaciones;
- 3) Apoyar estudios para atenuar los riesgos que representan para las zonas aledañas los embalses naturales o artificiales;
- 4) Financiar actividades de socorro para facilitar viviendas prefabricadas con el fin de albergar, temporalmente, a quienes hayan perdido sus hogares, así como para proporcionar alimentos, medicinas y ropa para las personas afectadas en estos casos.

La iniciativa fue acogida con beneplácito por el Organismo Mundial y esos dos huracanes, paradójicamente, dieron motivos realistas que han puesto en evidencia la inaplazable necesidad que existe de que se cree este Fondo de Auxilio Regional.

Hago votos sinceros para que la reunión que hoy inauguro se desarrolle dentro de un espíritu de solidaridad, buena voluntad y deseo de servicio.

Aprovecho esta ocasión para reconocer y agradecer, una vez más, la inapreciable ayuda que nos prestó la Organización de las Naciones Unidas, sus agencias especializadas y las del sistema regional, así como gobiernos amigos, durante la tragedia que nos tocó vivir hace apenas nueve meses.

Al dejar iniciada esta Conferencia, deseo que todos los participantes tengan una feliz estada en nuestro suelo Patrio y que las deliberaciones sean tan fructíferas como todos esperamos.

Muchas Gracias.

19 de Mayo de 1980.

Plenary Session: Presentations by International Support Organizations

In order to inform the country delegates of the potential for and limitations of bilateral and international donor support available for disaster preparedness projects, the international support organizations were asked to discuss:

- . the scale, regional or national, of projects usually funded;
- . forms of assistance, financial, technical or material;
- . the average time frame for project planning and implementation;
- . disaster preparedness and development interests, and the relationships, potential or actual, between the two;
- . the most effective means of requesting funding or assistance.

The support organizations represented at the conference comprised both agencies with a long-standing involvement in disaster assistance (UNDRO, PAHO, CARICOM, LORCS, OFDA, ACVAFS), offering a broad range of support activities, including technical and material assistance, training and some funding; organizations traditionally more oriented toward development programs: UNDP, the EEC, IDB, OAS; and organizations with a primarily technical or scientific focus: ITU, WMO, UNEP.

Several of the latter two groups have recently moved to recognize the relationship between successful economic development and mitigation of the effects of natural disasters. Background papers provided by the IDB, UNDP and EEC all indicate the need for development projects to address disaster hazards, incorporate prevention and preparedness elements in new projects and urge developing nations to consider incorporating disaster preparedness into national development planning. (It should be noted that many donors require that countries in need formally designate that a portion of funds allocated for country or regional development programs be used for disaster preparedness.)

Summaries of the presentations made to the delegates follow. More detailed discussions of individual donor programs can be found in the collected conference papers, Section VIII.

OFDA's Director, Joseph Mitchell, the session chairman, observed that his organization prefers to draw on the expertise available within the U.S. government to provide technical assistance or equipment rather than funding; however, OFDA would join with other organizations to assist disaster preparedness programs. He noted that the success of the present initiative depends on the level of commitment of Caribbean governments and the involvement of support organizations.

The EEC's Graham Kelly stressed two major points: EEC assistance is complementary to and may be granted in addition to that from its nine member countries; and such assistance is only granted in response to a specific request from the state in need. Funds are available under the Lome Convention, Article 59, for immediate and short term aid for disaster relief; disaster preparedness would have to be funded under European Development Fund regional programs -- so far countries have not identified disaster preparedness projects for funding in this context; proposed projects already total almost twice the amounts available. Caribbean governments must determine their own needs, identify projects and establish priorities. In the case of regional funds, the EEC considers that two or more countries may constitute a region. Mr. Kelly text is included in Section VIII.

The UNDP provides technical assistance and, in support, equipment, to further economic and social development by building human resources, transferring technology and developing institutions and services. Assistance includes provision of technical experts and training activities, but not loans or grants. Programming is based on a 5-year cycle, according to national per capita income and population size. 15-20% is allocated for regional rather than country projects. Project size varies from \$30,000 to about \$2 million. Recent emphasis on disaster preparedness: UNDP resident representatives should emphasize the economic benefits of preparing for disasters and see that prevention is addressed in formulating country programs. Mr. Erikson's paper is also included in Section VIII.

UNDRO assistance also falls into the technical category--provision of experts, granting fellowships for nationals of disaster-prone countries to study preparedness abroad, and organization of regional seminars. UNDRO has the advantage of flexibility in the form of and ways to provide assistance; though it has limited funds of its own, it has established access to resources of other agencies and bilateral donors. Its Caribbean activity is currently focused on developing a regional project in the Eastern Caribbean to develop and implement preparedness and prevention activities, along with individual country projects.

Because all national Red Cross societies are auxiliary to their governments, they are often an integral force in the preparation of disaster plans. The League has the responsibility for the funding of its projects--this funding is often a mixture of government and Red Cross monies. Most assistance takes the form of provision of technical personnel, equipment and training in preparedness and relief both to societies and to governments. Project duration ranges from a few months to several years within a 2 year budget and project cycle. Requests for assistance should be made through national Red Cross societies, in their absence, to Geneva. A Red Cross staff appraisal is a prerequisite. The League has special relationships with some UN agencies, especially UNDRO.

PAHO has a permanent office for disaster preparedness in its Washington regional office. As a technical cooperation agency, it provides assistance in the form of planning, resource inventories, training, preparation of manuals, visual aids, teaching materials, seminars, etc. Individual fellowships to study disaster preparedness and grants to analyze requirements after disasters are also possible. Project duration varies from a few months to 5 years. Funds may be allocated by a country after discussions with the PAHO country representative from health funds assigned to the country or from extra-budgetary funding; requests are normally channelled through the Ministry of Health. To summarize: PAHO has technical expertise but limited funding capacity. Dr. de Ville provided delegates with background papers, included in Section VIII.

The IDB works closely with international organizations concerned with disaster preparedness and prevention, but its primary concerns are long and medium term loans for development of infrastructure, agriculture and industry. However, experience has demonstrated that large disasters affect the development and progress of Bank projects. The effectiveness of the IDB in addressing disaster assistance is limited by the difficulty of incorporating ad hoc responses into long term programs. Recently, the IDB has moved to approve a set of policies and procedures designed to promote close cooperation with disaster preparedness organizations, strengthen civil defense systems, encourage governments to identify disaster risks and safe sites and use disaster-resistant construction techniques, as well as investigating disaster causes and analyzing damage and addressing immediate needs following a disaster to restore the pre-disaster status. These and related recommendations are aimed at predicting disasters and preparing for emergencies, preferably on a regional scale. Bank constraints: resources can only be used for Bank member countries; projects must be approved by and put forward by member countries' governments and approved by relevant Bank departments; no provision is made for general purpose and grant funds, though non-reimbursable technical assistance for specific projects in a specific country or countries is available. Project "gestation" ranges from 8-12 weeks for technical assistance to 6-12 months for major development projects. A nation's Central Bank, Ministry of Finance or local IDB representative can aid in preparation of requests for assistance--this approach will facilitate processing. Mr. Coore's presentation can be found in Section VIII.

The WMO is very active in providing technical assistance in meteorology and operational hydrology; however, it more often acts as an executing agency, particularly for UNDP projects, rather than as a funding agency. WMO funding operates through a voluntary cooperation program under which donor member countries provide the funding. Full information on this program is available for member states. Education and training projects are also implemented from limited funds within the organization's budget. The WMO Tropical Cyclone Project was recently upgraded to a Tropical Cyclone Program which includes four regional bodies. The Hurricane Committee of the Area Four Regional Body (North and Central America) developed an operational plan, which functioned well in the 1979 hurricane season, and a technical plan to define requirements and projected activities needed to implement them, with special reference to hurricane warning systems. Applications for assistance are submitted through the director of the National Meteorological Organization; implementation is relatively rapid.

The ITU provides both technical and financial assistance. Recognizing that disaster communication needs are unlikely to be solved by conventional telecommunication, ITU adopted resolution SPA-213, authorizing the use of earth stations without the prior frequency regulations normally required. ITU recommends satellite communications in disaster situations, because the conventional system is usually destroyed. ITU played a key role in the passage of a resolution authorizing government use of Radio Amateur Frequency Bands as a back-up communications network in emergency situations. Applications for assistance should be made by each country through the Minister in charge of telecommunications. M. Dubret provided background technical documents.

CARICOM provides technical and administrative assistance to member states after emergencies. Along with other international organizations (UNDRO, UNDP, PAHO) CARICOM is proposing a Caribbean sub-regional plan of action for disaster prevention, preparedness and relief. A coordinating center for disaster preparedness and relief activities and information is contemplated as part of this plan. CARICOM is also interested in promoting a building code to ensure implementation of proper construction techniques to prevent or reduce damage to buildings. Conference delegates should discuss disaster preparedness project opportunities and priorities with their ministries and governments and contact the CARICOM Secretariats concerning projects they wish to be considered at the annual EEC and CARICOM meeting on programs of regional significance. Mr. Noel should be contacted for additional details.

Though the OAS is primarily development oriented, program funds may be used for certain preparedness activities if they are included in a country's annual designation of priorities. Technical assistance as well as funding is available. Limited grant funds for relief may be obtained for member states from FONDEM.

The Caribbean Science and Technology Cooperation Committee coordinates OAS scientific and technical activities within the region. Oil Spill contingency planning has high priority; a preliminary oil spill plan has been drafted, and in 1980, with the technical cooperation of IMCO and contributions from UNEP, AID, the MAB program and the U.S. Coast Guard, it will be elaborated and expanded to include all Caribbean island territories. 1980 activities include assessment visits to the smaller Caribbean islands; a meeting of the smaller islands to introduce plan concepts and identify needs; a meeting of experts to formulate a final plan for approval; a second technical mission to gain acceptance of the plan by the islands; and a workshop for training of on-scene coordinators in techniques of oil spill control and elements of cooperation within the regional plan.

UNEP has limited funding available to stimulate, accelerate and coordinate environmental programs; it is not an executing agency, but relies on UNDRO or PAHO for project execution. The newly launched ACTION program for the wider Caribbean includes the bordering countries of South, Central, and North America as well as the Caribbean islands. Mr. Sanvincenti provided copies of the draft ACTION program, which will be considered by an inter-ministerial meeting in Jamaica early in 1981. Its recommendations are based on those of the St. Lucia seminar and will not duplicate existing activities.

HIGHLIGHTS OF QUESTIONS FOR DONORS

- With regard to potential EEC-funded projects: In the interests of regional integration, projects should be coordinated through CARICOM or the CDB and included on a final list presented to the EEC. It was stressed that projects must be initiated by the recipient government.
- CARICOM plays a catalytic role, responding to the expressed needs of member states, in preparedness for the 1980 hurricane season.
- The IDB rate of interest was identified as 8-8.5% for ordinary capital and 2-4% for special funds, depending on the type of project and the state of development of the country requesting loans. Generally rates are very low for reconstruction and rehabilitation.
- The possibility of establishing a special or post disaster fund in disaster-prone countries for immediate use without assessment was reviewed. At present UNDR0 can allocate \$30,000, UNDP \$25,000 and the US Ambassador \$25,000 for immediate relief, though all three require some type of assessment. Country efforts should focus on disaster preparedness so as to reduce damage and the need for disaster relief funds.

INTERNATIONAL SUPPORT ORGANIZATIONS

American Council of Voluntary Agencies for Foreign Service	Leon Marion
Canadian International Development Agency	Paul Dunbar
Caribbean Community Secretariat	Raymond Noel
European Economic Community	Graham Kelly
Inter-American Development Bank	Ricardo Peralta/ David Coore
International Telecommunication Union	Fernand Dubret
League of Red Cross Societies	Rene Carrillo
Office of the United Nations Disaster Relief Coordinator	Jean-Paul Levy
Organization of American States	Michael Greene
Pan American Health Organization	Claude de Ville de Goyet
United Nations Development Programme	Lars Erickson
United Nations Environmental Programme	Dario Sanvincenti
U.S. Agency for International Development Office of U.S. Foreign Disaster Assistance	Joseph Mitchell
World Meteorological Association	Donat Vickers

Plenary Session: Disaster Preparedness in the Caribbean

The search for a means to evaluate disaster preparedness in the Caribbean region evolved out of post-session discussions at the 1979 Disaster Preparedness Seminar in St. Lucia. Distribution of a "self-audit" questionnaire to the governments of the region was suggested; the final format of the self-audit was developed at the October 1979 planning meeting in Kingston, Jamaica, and copies were sent out shortly thereafter. An analysis of eleven self-audits received by the Office of U.S. Foreign Disaster Assistance indicates recurrent preparedness strengths and deficiencies:

- . Most of the countries surveyed have disaster plans for hurricanes only, despite widespread seismic and flood hazards. Many plans are out of date or do not address specialized sector needs--most need improvement.
- . Emergency operations centers are often inadequate in location, equipment and staffing. Many are located in police headquarters without direct communications with government. Periodic testing of equipment and staff response to warning is lacking.
- . Meteorological offices' response to hurricane warnings is generally good, but relaying of warnings to the public may not be adequate.
- . Search and rescue operations and emergency relief response in general are less than optimal--only one country reported an ongoing emergency relief organization.
- . Most communications equipment is VHF. Better communications equipment, training and maintenance were frequently identified needs.
- . Prevention and mitigation programs are seriously lacking.

The team survey of the Eastern Caribbean countries, reported by team leader Grace Pilgrim, reiterated these points, with the following additions: plans are indeed limited to hurricanes and in need of revision; several countries are now reviewing and amending plans; some may need assistance in this matter. An explicit regional plan and special plans for sudden disasters like fires, as well as hotel and hospital emergency plans, are needed. Few countries have ongoing disaster preparedness programs or projects. There are urgent needs for resource inventories, equipment and training, especially in the areas of public health and first aid; a communications survey should be the first priority for the entire region. Public awareness and education programs, for both children and adults, are needed; the media should be involved in this effort. Legislation and budgeting for disaster preparedness are needed in most islands.

Team observations of preparedness levels in the Central and Western Caribbean were covered by Franklyn McDonald. Again, the need for information--at all levels of society--was stressed. Awareness of disaster hazards and risk was low for both disaster preparedness agencies and the general public except in Belize and the Dominican Republic, especially for seismic disasters and landslides. Plans were difficult to obtain. Though warning systems for disasters exist, information dissemination needs improvement. Communications equipment is often incompatible within individual countries as well as within the region. (Police and military systems may be incompatible, for example.) The scientific and technical information available for risk and hazard analysis is not applied in development projects and policies. Existing plans are geared to small disasters and are incapable of handling major disasters. Planning for disasters should be linked to economic planning; its emphasis should be shifted from relief to preparedness.

Questions and Comments

Did the self-audits address the question of insurance for public and private property? No. Disaster insurance is essential.

Should special funds for short-term disaster preparedness be established on a regional basis? It is more important to obtain government commitment to promoting disaster preparedness programs, first by updating emergency plans and establishing priorities. Without this groundwork, money is unlikely to be put to effective use.

Plenary Session: Review of Preparedness Programs

A discussion of regional versus bilateral aspects of program development opened the session. Concern about pressure to develop regional programs was voiced by Jamaica's Jacqueline Mayers (who doubted that most countries were prepared to describe regional projects at the present time); William Dalton of OFDA indicated that regional programs would have to be worked out on a long term basis by donor-recipient teams, since no regional instrumentality now exists; and that the primary regional consideration was to develop compatible systems for international use. The discussion then turned to the substance of the program areas, beginning with Emergency Operations Centers.

Stephen Tripp, an OFDA consultant, characterized the Emergency Operations Center as a multifaceted program comprising several projects. Since an EOC should be located on a "safe site" in a disaster-resistant building, a survey of possible sites is indicated. 24-hour operations necessitate a dependable source of power and good linkage with the communications center (preferably located in the EOC); present locations of many Caribbean EOC's at police headquarters are crowded, isolated from government decision-makers and often have no auxiliary power source. Reliable EOC communications are dependent on good national and international communications networks. Crisis management training, search and rescue techniques and equipment, disaster survey and assessment training, epidemiological surveillance and training in maintenance and operation of radio equipment are all needs associated with effective disaster assistance operations; a crisis management seminar series for senior and cabinet level officials, dealing with such tasks as allocation of resources, relations with news media and delegation of authority, was proposed.

Again the question of regional or sub-regional EOC's was raised-- Graham Kelly of the EEC, supported by Raymond Noel, CARICOM, asked if a regional component for manpower resources were under consideration-- and the priority of country-level EOC development (especially communications linkages and maintenance) was reasserted.

Next, Communications Committee priorities were defined, by Sir Carlisle Burton of Barbados, as including not only telecommunications, but also a survey of country communications requirements, system design and development, training in operations, maintenance and emergency operations. The excellent ITU plan must be further developed to describe on-the-ground systems; an outreach program by the University of the West Indies with USAID and NASA assistance to link the scattered island systems via satellite was described; a link between Barbados, St. Lucia and the U.W.I. campus at Barbados would be subjected to a series of tests over an 8-week period; cost effectiveness and ability to meet costs must be carefully assessed; such use of advanced technology enables rapid progress, but requires sharing among the countries of the region. Satellite linkages could improve EOC disaster preparedness by providing facilities for teleconferencing, Caribbean-wide teaching, emergency medical advice to distant islands, radio connections between the EOC's of the region during a disaster and between donor and recipient countries and organizations.

Provision of a global network of data collection stations feeding via satellite to forecasting centers is a prerequisite for improved tropical cyclone warning systems in the Caribbean.

Kenrick Leslie of Belize, Chairman of the Meteorology Committee, discussed ongoing and planned WMO programs, their relevance to meteorology projects in the Caribbean region and the need for international cooperation to accomplish such comprehensive and timely data collection and analysis. The regional project documentation (See Section V of this document) includes minimum observation and communications systems requirements for each Caribbean country (in comparison to levels attained at present). Adequate communications systems, properly trained personnel and coordination of country warning programs under the WMO Region IV Program are high priority projects.

Colin Depradine of Barbados outlined the Caribbean Meteorological Institute's training and research programs (developed and carried out in cooperation with the WMO). In addition to training four classes of meteorologists: meteorological assistants, senior meteorological assistants, forecasters and graduate meteorologists, CMI holds seminars on such topics as flood forecasting, storm surge prediction and short range forecasting and serves as a center for collection of regional data, which is checked and summarized monthly. At present, its services are only available to the English-speaking islands, but a center for Spanish-speaking people is under consideration.

Jean-Paul Levy of UNDR0, chairing the Disaster Planning discussion, emphasized the importance of initial inventories of risks and of resources available for development of a national disaster plan. First priority is the analysis of the most effective and rapid use of existing resources to meet existing risks. Dissemination of warnings, evacuation procedures and mitigation measures all need early consideration. Ideally, a single coordinating agency as high as possible in administrative authority should be appointed to develop and implement plans, including the specific roles of government and non-government agencies, at both national and local levels, with some contribution to regional planning. All agencies involved should participate in training programs to better carry out their appointed responsibilities within the plan. Periodic drills are a necessity. Stockpiling of basic emergency supplies, legislation to circumvent normal bureaucratic procedures in emergencies and effective dissemination of public information before, during and after a disaster should be addressed during the planning process. Previously implemented disaster planning projects need country commitment in order to be successfully completed. New projects ought not be undertaken in a given area if previously existing projects have not received sufficient follow-up.

Public awareness needs were summarized by Grace Pilgrim of Barbados. (Her background paper on the subject is included under Section VIII of this document.) The essential components of a public awareness program include raising the national level of consciousness concerning the types of disaster hazards and their nature, public education concerning disaster warnings and safety procedures and effective use of the mass media for

public information through close working relationships with government and integration into national disaster plans. Disaster Information days or weeks have been used effectively in some islands (Barbados, Antigua, St. Lucia) and could perform useful functions in many others. Collection of current literature and audiovisual materials on natural disasters in the Caribbean region can be used to heighten public awareness of disaster hazards.

Opportunities for disaster preparedness action in Seismology were covered by Dr. John Shepherd of U.W.I.'s Seismic Research Unit in Trinidad. As stated in the five regional seismology projects, needs include: installation of seismographs in some islands, communications networks to enable interpretation of seismic data and monitoring of all live volcanoes, especially during an eruption when current data is most important.

Leon Marion of the American Council of Voluntary Agencies for Foreign Service reviewed areas for non-governmental organization's projects. Existing development programs in such areas as agriculture, water resources, nutrition, non-formal education, small industries and construction already have professional staff, funding, training programs and trained indigenous personnel. Voluntary agencies have flexibility for small-scale short term funding for emergency needs. The volags' communication network is tied in to those of OFDA and UNDR0 during disaster relief operations. Many volags also produce disaster situation reports and newsletters dealing with disaster assistance topics.

Considerations for a regional first aid project were summarized by Rene Carrillo and Jurgen Weyand of the League of Red Cross Societies. Two major target groups, inhabitants of disaster-prone areas and personnel charged with providing qualified post disaster aid, were identified; the former group's training is most essential because qualified aid may not be available at the disaster site until several hours or days after the disaster. The quality of training and readiness of trainees to apply their skills are vital. Awareness of need for first-aid skills must be created in local populations to obtain trainees--in many places, few attempts have been made to train the general public or those in rural areas, who are most in need of such skills. All national Red Cross Societies in the Caribbean have first aid training programs; unfortunately, most have been exported from the U.S. and Western Europe and are not geared to local needs.

PAHO's Dr. Claude de Ville reviewed public health sector preparedness in the Caribbean. Development of human resources through model plans for country-level public agencies and hospitals and training of managers and health professionals are currently of the highest priority. Programs will move from regional seminars for high-level managers to health professionals to the general public, with national health planners taking increasing responsibility for education programs, though materials must be provided on a regional basis. Communications, public awareness and building code projects all have important implications in the health sector; project development in these areas should be coordinated with public health activities.

Plenary Session: Country Presentations

This session provided country delegates with an opportunity to present their "felt needs" in the area of disaster preparedness. The content of delegates' presentations ranged from specific project proposals to more general statements of need. In the cases where project proposals duplicated the information contained in the project outlines, we have briefly summarized the material and refer the reader to the project outlines in Section V.

Sir Carlisle Burton, the country representative from Barbados, discussed a national project in the area of communications (see Project I-C-2, "Telecommunications Network for CERO, Barbados", Section V). He described CERO (Central Emergency Relief Organization) communication equipment as outmoded (12-27 years old) and unserviceable. In addition, the CERO communication system operates on an AM frequency, has a limited range, and is vulnerable to interference.

A project consisting of two components is proposed to remedy these limitations:

- . provision of 15 base stations linking essential services and control points
- . establishment of a system linking 16 police centers to collect and disseminate information

Kenrick Leslie reviewed two projects that reflected areas of need in Belize. As background information for the Flood Forecasting Project (See Project XI-C-1, Flood Warning System for Belize, Section V.), he noted that in the past 50 years 27 tropical storms and hurricanes have caused severe damage in Belize. In 1979, 50% of the country's livestock were lost when the Belize River flooded. Since agriculture represents forty percent of the economy, the impact of flooding on development is especially severe. Project objectives were outlined as follows:

- . to implement a data collection network
- . to establish a communications system for data collection
- . to train personnel in data processing and analysis

The second project addresses an inadequate communications system. (See Project I-C-4, "Improvement of Radio Belize AM Transmission Network", Section V.) Belize is served by a single radio station (Radio Belize) which transmits both in the AM and FM bands. Because of the deterioration of the main transmitter, (from 20 kW to 9 kW), AM transmission was unsatisfactory during the recent hurricane. FM transmission has a limited range of 45 miles. Since Radio Belize is used by the Central Emergency Organization for disaster warning and also constitutes the only source of disaster warnings for parts of southern Mexico, northern Honduras and the Bay Islands as well as Belize, Mr. Leslie believes that improved Radio Belize AM transmission is a necessity.

Mr. Dennis A. Foster of Grand Cayman discussed the need for medical and disaster emergency support supplies to mitigate disaster impacts (see Project XI-C-2, "Cayman Islands - Provision of Disaster Emergency Support Supplies, Section V). The Grand Cayman Government would supply protected storage facilities, maintain drug stocks and assume local transportation costs.

The Jamaican delegate, Jacqueline Mayers, stated that, although Jamaica has had an emergency organization for several years, its few staff members were inadequately trained. Assistance in setting up a new EOC, preparing a material plan, training and other related activities was requested. (See the following projects for a concise definition of Jamaica's needs: Project I-C-5, "Development of Disaster Communications System for Jamaica"; Project III-C-4, "Preparation of a National Disaster Plan for Jamaica"; Project IV-C-7, Establishment of EOC Facilities, Jamaica"; Project IV-C-8 "EOC Communications System, Jamaica; Project IV-C-9, "Training of EOC Staff, Jamaica"; Project V-C-1, "Raising Level of Public Awareness, Jamaica"; Project XI-C-5, "Improvement of Flood Warning System, Jamaica", Section V.) Ms. Mayers commented that some countries may need assistance in preparing project documents. The Antiguan representative, Henson Barnes, added that there is a need to identify the interests of countries that have not yet prepared projects. William R. Dalton, USAID, raised the question of whether it would be safe to assume that government endorsement of these projects would follow.

Mr. Franklyn Farier of Montserrat reviewed general areas of need, since no project document(s) had been prepared. (See Project IV-C-10, "EOC Facility, Montserrat", developed after this session, Section V.) Communications has the highest priority, followed by public awareness, and capital for drug stockpiling.

The proposals for drug stockpiling stimulated a discussion of the utility of stockpiles in general. Milton Penn, of the U.S. Virgin Islands, observed that:

- . If the communications capability is intact, there is no need for stockpiles.
- . An appropriate alternative to stockpiling would be legislation that enables commandeering of existing supplies in case of an emergency.

William R. Dalton, USAID, suggested that a regional stockpile might better suit the needs of the Caribbean area; because it is improbable that several disasters would strike any one country in a given year, cost-effectiveness would not be realized by establishing country stockpiles.

Roy Halstead, representing the Turks and Caicos Islands, outlined two projects based on his government's needs. (See Projects XI-C-9, "Emergency Water Storage, Grand Turk"; and XI-C-10, "Hurricane Shelters, Grand Turk".) Since there is no fresh ground water supply in Grand Turk, drinking water can be obtained only from rainwater. Both the bulk of the population and the water storage tanks are located almost entirely in lowland areas, and are vulnerable to the full impact of a storm surge. Therefore, a storage reservoir was proposed to provide a potable water supply for the people of Grand Turk for a period of 150 days, allowing a consumption of 5 gallons per head per day.

The second project, which proposed several hurricane shelters, addressed the vulnerability of the typical Grand Turk house. Generally houses are small, wooden and situated in lowland areas.

The representative of the U.S. Virgin Islands, Milton Penn, discussed disaster preparedness issues such as the lack of funding for administration of emergency preparedness, public apathy toward disaster preparedness and the need for legislative authority. He also made specific reference to the lack of assured water supply in the Virgin Islands; however, he did not suggest any projects.

Price Pady, the Haitian representative, outlined three areas of interest: fellowships to study disaster preparedness, assistance for implementation of country plans and training of health personnel. A specific project concerning disaster preparedness planning was submitted. (See Project III-C-2, "Preparation of National Disaster Plan - Haiti, Section V.")

Jose Ramon Oviedo, Public Health and Welfare Secretary, and Fernando Schriels of the Meteorology Department presented two aspects of the Dominican Republic's needs: first, priority health requirements in human resources (training) and equipment (See Project VII-C-1, "Priority Health Needs in Disaster Prevention in the Dominican Republic", Section V.) and, second, radar, communications equipment, and hydrological monitoring equipment. (See Project II-C-1, "Improvement of Dominican Republic National Meteorological Service", Section V.)

Stanislaus James, representing St. Lucia, summarized three projects prepared for the conference in the areas of Communications, Emergency Support for Fire Services and Stand-by Emergency Water Supply. (See Project I-C-6, "Emergency Back-up Telecommunications Equipment for St. Lucia, Project XI-C-7, "Emergency Support for Fire Services, St. Lucia" and Project XI-C-8, "Stand-by Emergency Water Supply Project, St. Lucia".)

A summary of the country presentations provided by Jacqueline Mayers listed the following priorities for projects: Communications, Emergency Operations Centers, Preparedness Planning, Public Awareness, Stockpiling, and Vulnerability Analysis. (See the attached "Delegates Report" for other areas of interest.)

The following is a list of country projects which were submitted, but were not presented during the Country Presentation session:

Project 1-C-1, Emergency Communications Plan for Antigua and Barbuda.

Project 1-C-4, Radio Telecommunications Network for Dominica.

Project III-C-3, National Disaster Plan - Guyana.

Project III-C-5, Assistance in Disaster Preparedness - Trinidad/
Tobago.

Project IV-C-1, EOC - Communications & Training, Anguilla.

Project IV-C-2, EOC Facility, Antigua.

Project IV-C-3, EOC Facility, Communications Equipment, Training -
Dominica.

Project IV-C-5, Development of EOC, Grenada.

Project IV-C-6, EOC Facility/Communications, Guyana.

Project IV-C-11, EOC Communications/Training, St. Kitts/Nevis.

Project IV-C-13, EOC Facility, Turks and Caicos Islands, Belize.

Project IX-C-3, Survey of Hurricane Shelters, Guyana.

Project IX-C-4, Disaster Emergency Shelter, Guyana.

DELEGATES REPORT

A) PRIORITY LIST OF PROJECTS:

1. Communications (regional and country) survey of existing systems. Design for new or improved systems. Equipment.
2. Emergency operations centers (regional/sub-regional and country) includes provision and/or identification of building. Assistance in setting up organization.
3. Preparedness planning. Regional and individual country models for various types of risks.
4. Public awareness.
5. Stockpiling (including but not limited to: blankets, beds, tents, first aid equipment, emergency lighting and heating equipment, medical supplies, standby generators, water tanks, Land Rovers, diesel pumps, etc. (regional and country)).
6. Vulnerability analysis and damage assessments, flood forecasting.

B) TRAINING REQUIREMENTS ON REGIONAL AND COUNTRY LEVEL (ALL COUNTRIES):

1. First Aid.
2. Media personnel, including government information services in disaster preparedness.
3. Communications (operations and maintenance of equipment).
4. E.O.C. staff.
5. Public awareness. Training and materials for distribution.
6. Health. (Already largely defined in PAHO document).
7. Crisis management.
8. Search and rescue.
9. Shelter management and mass feeding organization.

C) LEGISLATION (ALL COUNTRIES INTERESTED).

1. Disaster legislation.
2. Land use laws, including zoning regulations.

3. Building code. Considerations to be given to the natural hazards to which the countries are subject as well as the economic circumstances of the countries in the region.
4. Regulations dealing with movements of goods in time of disaster, e.g.: customs for incoming goods, taxes, taking over of warehouses and goods in supermarkets, etc.

D) REGIONAL ONGOING PROJECTS: All countries interested would like projects elaborated to include maximum consideration of disaster preparedness needs, where applicable.

1. Seismology.
2. Meteorology.
3. Oil spills.

1. Emergency Communications Summary Statement and Comments

Three regional and seven country projects were prepared in this field however, there is some uncertainty at this stage of development as to possible duplication between the regional and national proposals. It is a matter that can easily be sorted out as the project area evolves.

It was agreed during the meeting in the Dominican Republic that communications, a prerequisite to any regional or national disaster relief program, must be given the highest priority among Caribbean disaster preparedness projects.

Taking into account individual country emergency communications projects submitted, together with expressions of interest in disaster communications reflected in disaster preparedness self audits, in previous communications, or at the St. Lucia Caribbean Disaster Preparedness Seminar, most Caribbean countries have now expressed interest in this project area. Nevertheless, it would be useful for all participating countries to go on record at this time.

On this basis, demonstrated emergency communications interest falls into three categories:

1. Local (disaster site),
2. National (from a National Emergency Command Center to all affected parts of a country), and
3. Regional (including subregional and regional networks and international links).

On July 7 a small team sponsored by the Office of U.S. Foreign Disaster Assistance in collaboration with the Government of Barbados, with participation of the Antigua Meteorological Service, commenced travel in the Eastern Caribbean to ascertain what measures might be taken by island governments to improve their emergency operations systems before the full onset of the 1980 hurricane season.

Dalton

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications

Chairman - Sir Carlisle Burton

I. Title - Survey of Communications Requirements for Caribbean Region

II. Description of need or problem:

In order to have full knowledge of the present capability in each country and to determine what improvements are essential, it was agreed that a team of two communication experts should visit all countries in the region. The object would be to complete the partial information held at present. Each country has its own special factors to be considered in that regard.

III. Description of project and objectives:

This survey should state what kind of equipment is necessary, its preferred location and details of emergency equipment already installed. Sometimes the survey would, it is felt, recommend adding to existing networks rather than providing new ones. Topographical radio communication problems should be studied. The location of the installations should be discussed, taking into account strength and suitability of buildings and convenience of use in a disaster situation.

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

Assistance with manpower and transportation should be given. Information pertinent to the survey should be made available, including all technical details.

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

In order to solve the problem fully, it must be treated on a regional basis. As the countries affected are poor, partly due to previous disaster effects, it is necessary to seek regional and international support.

VI. External financial assistance/technical assistance:

Based on estimates of U.S. \$300 per day for 3 months for two consultants plus cost of transport, researching information. Cost estimate is \$120,000.

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

To be determined by negotiation with various agents; however, a significant role for the International Telecommunications Union (ITU) seems probable.

Drafted by: L.P. Stevens

Communications 1-R-2

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Communications

Chairman - Sir Carlisle Burton

I. Title - Emergency Communications System Design and Development for Region

II. Description of need or problem:

When the proposed survey of present equipment has been completed (under another project) it will be necessary to design and create a suitable system for each country. This phasing would avoid duplication and ensure an adequate system for the individual needs of each country. The system for each country should be compatible, subject to integration to achieve a regional network.

III. Description of project and objectives.

An emergency communications system would be on those levels to cover: Phase I local (disaster site), Phase II integrated (national) and Phase III regional (international). The types of equipment i.e., H/F, VH/F, or UH/F, would have to be studied. The requirements of the Emergency Operation Center (EOC) would have to be considered through liaison with appropriate EOC project personnel. The needs of Health Authorities, Meteorological Services and all involved organizations should also be taken into account. A Regional Project for the Improvement of the Hurricane Warning System in Central America and the Caribbean is in preparation and should be encompassed. Security consideration could be met by the use of a limited number of scramblers and special procedures.

The necessity for training in the operation and maintenance of equipment was recognized. Many manufacturers provide on-the-spot training along with installation. Most of the equipment is designed to be simple to operate. The training of a Servicing Technician might be needed, but most countries have some technicians trained to an adequate level. In a few cases, support from neighboring islands may be necessary. A regular routine testing method for the whole network would detect failures early. Some stocks of spares should be held in each country and probably at any regional disaster centers created later. A responsible official would be needed to guarantee that maintenance and testing procedures were followed.

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

Counterpart personnel to be supplied when installation takes place. Also, full assistance given to the designers and installers. A safe place of installation would also be provided by the government.

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

In order to properly address the problem, it is necessary to treat this matter on a regional basis. As the countries affected are poor, partly due to previous disaster effects, it is necessary to seek regional and international support.

VI. External financial assistance/technical assistance:

A first estimate, using the limited information now available, is US\$ 1,000,000 to US\$ 1,500,000 for a complete regional system.

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

To be negotiated with interested international funding agencies; however, the International Telecommunications Union (ITU) is expected to have a significant role.

Drafted by: L.P. Stevens

Communications 1-R-3

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

Communications I-C-1

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.

Communications I-C-2
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 wireless, 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 Control 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:

<u>Equipment</u>	<u>Total Cost</u>	<u>Phase I Hdqtrs. Division</u>	<u>Phase II Northern Division</u>	<u>Phase III Southern Division</u>
	\$	\$	\$	\$
<u>CERO</u>				
15 Stations	325,000		CANNOT BE PHASED	
<u>Police</u>				
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 auxiliary stations will be located in the north of the country and the other in the south.

The northern auxiliary 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.

Communications I-C-4
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 supplies 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 accommodation, 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 efficient 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	<u>2100.00</u>
	20,000.00

Caribbean Disaster Preparedness Projects Conference
Project Proposal

11-C-6

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

11-R-1

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 services 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 following 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".

<u>Training</u>	<u>Estimated cost in US\$</u>
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)	<u>48,600</u>
	233,700

EQUIPMENT

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

	<u>Description</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
I.(a)	4 Rawinsonde stations) 6	150,000	900,000
(b)	2 Radiowind stations (wind finding radars))		
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 Spare parts and consum- ables for above listed equipment 10% of esti- mated cost	-	-	100,000
				<u>213,500</u>
	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

11-C-1

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 facsimile, 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

111-C-1

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 occurrence 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 UNDR0 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 have 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

III-C-4

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 UNDR0 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.

Assistance in disaster preparedness to the Government of Trinidad and Tobago

I. Background

Trinidad and Tobago, located a short distance off the Venezuelan coast near latitude 10 degrees north, is subject to seismic and meteorological hazards as well as to damage from fires and marine oil spills.

Although located to the south of the primary hurricane area, the country has suffered from hurricanes in the past. On 30 September 1963, Hurricane Flora caused significant damage to the island of Tobago. On 14 August 1974, central Trinidad was struck by Hurricane Alma, which affected approximately 50,000 persons and caused 5 million dollars in damage. The months of June through November constitute the wet season for the country and also cover the period of tropical storm potential. The islands have numerous small rivers, none of which are navigable, but which are subject to rapid rises and flooding in case of torrential rainfall.

Geologically an extension of the South American continent, the island of Trinidad is crossed from east to west by three relatively low mountain ranges, with highest elevation reaching 941 meters in the heavily forested Northern Range. The island of Tobago is of volcanic origin, with peak elevation 549 meters. No geologically recent volcanic eruptions have occurred.

Historical seismic damage frequency, based on the record of damage over about 300 years and on instrumental readings since about 1900, show that Port-of-Spain, the nation's capital, has experienced an average of 14 earthquake events per century which were large enough to cause at least minor building damage. It has been estimated that the area of devastation in the largest probable earthquake (Richter magnitude 7.5 - 8.0), would have a radius of well over 50 kms and could easily include the whole of Trinidad. This might cause deaths of up to 10% of the population, total disruption of industrial and agricultural production, and damage to property (1974 prices) in excess of TT \$4,000 million. In addition to the direct effects of an earthquake, secondary effects from landslides and fires can also be expected, but risk from tsunami is assessed to be only a minor additional hazard.

In the face of these non-negligible disaster risks, there is no emergency plan in the country nor any legislation defining the responsibilities of the various agencies concerned with disasters. The National Emergency Relief Organization (NERO) has little means to act.

In the course of discussions held in Port-of-Spain in February 1980 between the Government and a representative of UNDRO, it was agreed that technical assistance to draft a disaster legislation and strengthen NERO would be most useful. This assistance could be provided by UNDRO with financing from the UNDP country program Trust Fund. Later discussions with the national Red Cross Society confirmed the need for such assistance.

This project document is, therefore, a follow-up to the discussions held with the Government in February 1980.

II. Objectives of the project

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

B. Immediate objectives: The immediate objectives are to formulate appropriate national legislation, which will clearly define the role of the various national agencies - both within and outside Government - involved in disaster-related matters, and to help prepare adequate emergency plans for the various types of disasters - 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 co-operation projects to promote disaster prevention, preparedness and relief.

III. Project activities

The project will be carried out by a team of two experts, one an expert in disaster preparedness and the other a legal adviser.

1. Disaster preparedness expert: He will advise the Government on all aspects of pre-disaster planning including the organizational machinery necessary, the formulation and implementation of emergency plans (roles of the various agencies involved, logistical aspects such as communications, transport, stockpiling of emergency supplies, rubble removal, short-term rehabilitation, warning system, evacuation operations, etc.) and draft disaster legislation which would clearly assign specific roles to the various agencies concerned (NERO, Fire Department, Defense Force, Red Cross, etc.), so as to ensure that each will establish its own plans and react automatically in case of disaster, under the over-all co-ordination of the national disaster relief co-ordinator. The expert will be assigned to Trinidad and Tobago for a duration of three months and shall be assisted during the last month of his mission by a legal expert (see below). He will have extensive experience in the organization and running of emergency relief agencies, the formulation and implementation of emergency plans, the establishment of warning systems, the organization of evacuation operations, the distribution of relief supplies, the containment and cleaning up of oil spills both on land and at sea, etc.

2. Legal expert: This expert will be assigned to Trinidad and Tobago for a duration of one month to assist the disaster preparedness expert in finalizing the draft disaster legislation. He will in particular verify that the draft legislation is well adapted to the legal system of Trinidad and Tobago, and that is realistic and action-oriented. He will have a university degree in law and be well versed in the legal system of the country. In addition to the above task, he will advise on such matters as the suppression of visa requirements for international relief teams and of import quotas and customs duties on relief supplies, the granting of overflight and landing rights to relief missions, the possible participation of Trinidad and Tobago in mutual assistance agreements with neighboring countries, its potential involvement in relief operations abroad, particularly in the Eastern Caribbean area, etc.

3. Training provisions: The two experts provided for in this project will give lectures in their respective fields of expertise during the course of their mission and possibly participate in disaster prevention and preparedness seminars which may be organized in the country. This training will be of a practical nature and based on the study of specific aspects of the disaster prevention and preparedness situation in Trinidad and Tobago.

4. Government inputs: The Government of Trinidad and Tobago will cover the local costs of the project. In particular, it will provide the team with a secretary, a car and driver and adequate office space; it will also cover general expenses for the above and communications and travel expenses for the two experts within the country.

5. Supervision and evaluation of the project: UNDR0 will supervise the project throughout and the two experts will be in constant contact both with the UNDP Resident Representative and UNDR0 in Geneva. Upon completion of the project, the two experts will submit a report to UNDR0. This report will be examined by UNDR0 in consultation with UNDP, and after revision and approval the report will be officially submitted by UNDR0 to the Government.

PROJECT BUDGET

	m/m	US \$
<u>1. To be financed from the UNDP country program Trust Fund</u>		
10 <u>PROJECT PERSONNEL</u>		
11 <u>Experts</u>		
11-01 Disaster preparedness expert	3	15,000
11-02 Legal expert	1	5,000
TOTAL		20,000

	m/m	US \$
<u>II. To be provided by the Government</u>		
10 <u>PROJECT PERSONNEL</u>		
11-01 Secretarial staff	3	750
11-02 Driver	3	<u>600</u>
Component Total		1,350
40 <u>EQUIPMENT</u>		
41 Expendable equipment (office supplies)		150
43 Premises		<u>200</u>
Component Total		350
50 <u>MISCELLANEOUS</u>		
53 Use and conservation of equipment (car and typewriter)		300
54 Other (domestic travel of experts)		<u>1,500</u>
Component Total		1,800
GRAND TOTAL OF GOVERNMENT CONTRIBUTION		<u>3,500</u>

Project of the Government of Antigua, Barbados, Dominica
Grenada, Montserrat, St. Kitts - Nevis - Anguilla
St. Lucia and St. Vincent

Title: Regional Programme for Natural Disaster Prevention and Preparedness

Duration: 18 months

Government Co-operating Agencies: CARICOM and national planning agencies

Executing Agency: United Nations (UNDRO)

Date of submission:

Starting Date: November 1980

Government Contribution: \$82,500
(in kind)

Other Contributions: \$325,500

- Multi Island Fund (UNDP): \$100,000
- CARICOM Technical Co-operation Programme: \$100,000
- UNEP (Caribbean Action Plan): \$100,000
- Other bilateral or international agency contributions: \$25,500
- USAID/OFDA possible expert or consultancy services

APPROVED

on behalf of the Government of Antigua
(title and signature)

Date

APPROVED

on behalf of the Government of Barbados
(title and signature)

Date

APPROVED

on behalf of the Government of Dominica
(title and signature)

Date

APPROVED

on behalf of the Government of Grenada
(title and signature)

Date

APPROVED	on behalf of the Government of Montserrat (title and signature)	Date
APPROVED	on behalf of the Government of St. Kitts - Nevis - Anguilla (title and signature)	Date
APPROVED	on behalf of the Government of St. Lucia (title and signature)	Date
APPROVED	on behalf of the Government of St. Vincent (title and signature)	Date
APPROVED	on behalf of the Executing Agency (signature)	Date
APPROVED	on behalf of the UNDP (Multi Island Fund) (signature)	Date
APPROVED	on behalf of UNEP/Caribbean Action Plan (signature)	Date

I. BACKGROUND AND SUPPORTING INFORMATION

A. Justification for the project

All the islands covered by this project are disaster-prone. The main risks affecting all or most of them are hurricanes, floods, earthquakes, volcanic eruptions and related phenomena such as landslides and water contamination. In 1979 alone, a volcanic eruption affected St. Vincent, hurricane David - and to a lesser extent hurricane Frederic - hit Dominica causing widespread destruction, and floods and landslides occurred in Dominica and Grenada. All these events clearly showed the lack of adequate preparedness and prevention measures and the need to initiate action to remedy the situation.

As a result of hurricanes David and Frederic, which also devastated the Dominican Republic in the Greater Antilles, the Committee of the Whole of the United Nations Economic Commission for Latin America (ECLA) adopted on 19 October 1979 resolution 417 (PLEN. 13) welcoming "the proposal by the Government of the Dominican Republic that the United Nations, and more particularly the Office of the United Nations Disaster Relief Co-ordinator, should study ways and means of setting up specific machinery to cope with the natural disasters that periodically occur in the Caribbean basin". This resolution was endorsed on 9 November 1979 by the General Assembly in resolution 34/18.

Earlier, at the Conference of Health Ministers of the Caribbean Community (CARICOM) held in Antigua on 10-12 July 1979, a resolution had been adopted calling on the Secretary General of CARICOM to "seek technical co-operation from UNDRO ... in arriving at his conclusions about the future role of the Secretariat in this programme area".

The Office of Foreign Disaster Assistance (OFDA) of USAID organized from 10-20 June 1979, in St. Lucia, a Caribbean Disaster Preparedness Seminar, in which UNDRG, CARICOM, PAHO and other organizations participated. The Seminar formulated a number of recommendations presently being implemented with the participation of the governments and agencies concerned. The CARICOM countries represented at the Seminar were particularly vocal in requesting that a Caribbean regional disaster organization be developed.

In January 1980, at the Meeting of Government Nominated Experts to Review the Draft Action Plan for the Wider Caribbean Region, organized by UNEP and ECLA, the question of natural disasters was also considered and recommendations made for action with regard to both disaster prevention and preparedness.

In February 1980, in the course of discussions held in Georgetown, Guyana, between representatives of UNDRO, CARICOM and UNDP, it was agreed that the best way to pull all these threads together would be to focus first on the less developed Eastern Caribbean islands, by implementing a project aiming at developing regional prevention and preparedness activities. It was felt that due to the small size of the countries concerned it probably would not be possible or practical to attempt to establish disaster preparedness and relief machinery in each island. Instead, a project aiming at promoting concrete measures of disaster preparedness and prevention, and which would look at the desirability and possibility of establishing a permanent regional mechanism in the area was deemed preferable.

B. Government participation

In order to ensure good practical involvement of the participating countries in the project, it is proposed to establish a project Advisory Committee composed of representatives of each participating country (Antigua, Barbados, Dominica, Grenada, Montserrat, St. Kitts - Nevis - Anguilla, St. Lucia and St. Vincent). In consultation with the executing agency, each country will designate as national co-operating agency for the project the most appropriate national body. The members of the Advisory Committee will be representatives of these national co-operating

agencies. The Committee will meet at least three times (once before the start of the project, once after eight months of implementation, i.e. at the end of the first phase, and once after fourteen months), with a view to assisting in the formulation of the work programme, examining the progress made in its implementation and making suggestions to improve the contribution of the project to the solution of disaster-related problems in the region. UNDRO, UNDP, CARICOM, PAHO, the regional ECLA Office, the Joint UNEP/ECLA Project on Environmental Management in the Wider Caribbean Area, OFDA/USAID and, if considered desirable, the University of West Indies, will also participate in the meetings of the Advisory Committee.

C. Other related government activities

The results of the UNDP Project (RLA/72/049/B/01/16) on advanced training in meteorology in the English-speaking Caribbean, which is currently being implemented by the World Meteorological Organization, as well as of the project for permanent volcano monitoring to be implemented shortly in St. Vincent within the framework of the UNDP country programme, will be considered as direct inputs to this regional project. So will the work presently carried out by the Seismic Research Unit of the University of the West Indies as well as any other joint regional activities carried out in disaster-related fields in the region by UNDRO, PAHO, USAID/OFDA, UNEP or other entities.

D. Future activities

This being the first regional disaster preparedness and prevention project in the Eastern Caribbean, the need for future assistance -- including the possible establishment of a permanent regional mechanism -- will be determined in the course of its implementation.

II. OBJECTIVES OF THE PROJECT

A. Long-range objectives

The long range objective of the project is to develop the individual as well as the collective capacity of the participating countries to prevent or mitigate the disastrous effects of natural phenomena and to cope with disasters which will occur. As such, the long-range objective is to contribute to the development of the countries concerned by reducing the losses due to disasters in a manner compatible with environmental protection.

B. Immediate objectives

The immediate objectives of the project are to promote and facilitate the adoption of preparedness and prevention measures at the national and regional levels, and in particular:

1. To determine the present situation and trends with respect to the organization and the programmes of the participating countries and to assess the impact of natural disasters on their economies (direct and indirect damage) and the environment.
2. To help governments in the adoption of preparedness measures and the formulation of prevention policies (emergency plans, relief teams, warning systems, vulnerability analysis, land-use legislation, zoning laws, building techniques and codes, public information, restoration of natural resources, environmental management, etc.) and to determine their needs for further technical co-operation in these fields.
3. To determine in this respect the need for a permanent regional mechanism and, should the establishment of such a mechanism be considered necessary, make recommendations with regard to its nature, functions, location, sources of funding and relations to existing national and international agencies, particularly UNDRO.
4. To strengthen the technical, statistical and administrative services needed for the efficient planning and execution of activities related to disaster preparedness and prevention, and to train national personnel in these fields.
5. To help in the formulation of other technical co-operation projects to promote disaster preparedness and prevention and mutual assistance in cases of disaster.
6. To assist in the formulation of mutual assistance agreements between the participating countries in disaster-related matters.

III. WORK PLAN

The project will be carried out in two phases by a regional team of two experts recruited for the duration of the project and assisted during the second phase by a number of short-term consultants. Project activities will be supervised and co-ordinated by the Project Manager who will be heading the regional team of experts.

1. The regional team

The main function of the regional team will be to assist the participating governments in the formulation of concerted policies for disaster preparedness and prevention and to identify the activities and projects which should receive special support. In carrying out these activities, the regional team will co-operate closely with the UNDP Resident Representatives in the area and consult with UNDRO, CARICOM, ECLA and the regional and local offices of WHO/PAHO, FAO, WMO, UNESCO, UNEP and other pertinent agencies.

The regional team will include for the whole duration of the project a disaster preparedness and relief co-ordination expert and a disaster prevention specialist. During the first phase (eight months), when the emphasis is to be on preparedness, the preparedness expert will be the Project Manager; in the second phase, it will be the disaster prevention specialist.

2. Short-term consultants

The project provides for a number of short-term experts, who will carry out, not necessarily in all the countries, studies of a specialized nature. The types of expertise listed and the duration of the assignments of the short-term experts take into account studies already carried out in the region and the existing knowledge of specific risks in the countries concerned. At this stage, it is envisaged to include in the project, for durations of two to three months each, short-term consultants in the following fields: hydrology, meteorology, geology, seismology, volcanology, economics, environmental engineering and legislation. A reserve of three man-months will be kept to respond rapidly to the need for specific expertise in fields which may be identified in the course of the implementation of the project; such consultants will be hired on an ad hoc basis for tasks which are clearly identified and assigned to them by the Project Manager. In the fields of volcanology and meteorology, one of the roles of the experts will be to maintain close co-operation with the projects falling under the umbrella of this regional project (see Section I.C. above).

The schedule of activities to be carried out under this project, assuming it is approved no later than July 1980, would be the following:

Activity	Location	Commencement Date	Duration
Two man regional team (preparedness expert and physical planner)	Project headquarters and countries concerned	November 1980	18 months
Hydrologist	"	July 1981	3 months
Meteorologist	"	July 1981	3 months
Geologist	"	September 1981	3 months
Seismologist	"	October 1981	2 months
Volcanologist	"	October 1981	2 months
Economist	"	October 1981	3 months
Environmental engineer	"	November 1981	3 months
Legal expert	"	November 1981	3 months
Ad hoc consultants	"	To be determined	3 months

A. Description of Project Activities

In view of the urgency of promoting immediate preparedness and prevention measures at both the regional and national levels, the project will focus during its first phase (i.e. during the first eight months) on laying the groundwork for ensuring a prompt response of the countries either individually or collectively in future disaster situations. The second phase will focus more on longer term problems of disaster prevention and preparedness.

Phase I: During the first phase, the regional team will:

- a) Study in close co-operation with the governments and agencies concerned with the situation within the region with respect to disaster preparedness and prevention and make recommendations for its immediate improvement; the team will in particular study the desirability and possibility of establishing a permanent mechanism for disaster preparedness and relief at the regional level and formulate initial recommendations which will be refined and finalized during Phase II of the project.
- b) Disseminate information on disaster-related policies and programmes from other countries which may be of interest and practical value to countries in the region.
- c) Train personnel from the participating countries in various fields related to disaster preparedness such as the formulation and implementation of emergency plans, the setting up of warning and evacuation systems, etc.
- d) Organize technical meetings and seminars for specialists from the participating countries and international experts in order to promote the exchange of information and experience on specific aspects of disaster preparedness and short term disaster prevention.

Phase II: During the second phase, starting at the beginning of the ninth month of the project, the regional team, assisted by the short term consultants, will:

- a) Finalize its recommendations on the desirability and possibility of establishing a permanent mechanism for disaster preparedness, relief and prevention at the regional level, and in particular make specific recommendations on its location, modus operandi, source of funding, staffing, date of establishment, etc., bearing in mind the worldwide responsibilities of UNDR0 in these fields.
- b) Train personnel from the various countries in the longer term aspects of disaster prevention (vulnerability analysis, land-use legislation, zoning laws, building codes and building techniques, public information, environmental management, etc.).
- c) Organize technical meetings and seminars for specialists from the participating countries and international experts in order to promote the exchange of information and experience on longer term prevention and preparedness measures and sound environmental management.

d) Provide advice on specific aspects of disaster preparedness and prevention at the request of participating governments.

The regional project will give particular emphasis to the provision of technical co-operation and training:

1. Technical co-operation and consultative services

The regional team will evaluate the situation of each participating country with respect to disaster risks, disaster preparedness and disaster prevention, identify and formulate programmes and projects in order to improve the existing situation, and determine in close co-operation with each government the type of further assistance it may need from abroad or be in a position to provide to other countries in the region. Where necessary, the regional team will also provide upon request from participating countries short-term consultant services on specific aspects.

2. Training activities

While the experts working within the framework of the project will in the course of their activities have an important training role in respect of the personnel of the co-operating agencies, the shortage of qualified staff in certain disaster-related fields makes it necessary to provide for special training activities. The main purpose of such training will be to make it possible for nationals from the participating countries to benefit from the knowledge and experience acquired during the implementation of the regional project or as a result of other prevention and preparedness activities. Training will consist in the following:

- a) Participation in disaster prevention and preparedness seminars and courses or possibly organization of such seminars and courses in co-operation with other international, regional or national bodies. This training will be of a practical nature and based on the study of specific national cases, using in particular the results of the study and advisory mission mentioned above (see also sub-paragraph c) and section C2. below).
- b) Training of personnel from participating countries in disaster prevention and preparedness through their integration in the regional team.
- c) The organization, in co-operation with national or regional institutes, of three sub-regional seminars dealing with, i) the organization and co-ordination of disaster relief, ii) problems related to the prevention of, and preparedness for, disasters which may result from hurricanes, floods, land erosion, etc., and (iii) prevention of, and preparedness for, disasters of seismic or volcanic origin. The seminars, which will last one week each and take place, respectively, after six, ten and fourteen months of implementation of the project, will be attended by two representatives from each country who will be responsible for the formulation and implementation of national policies in these fields. If possible, during the implementation of the project, a meeting will also be organized on the practical applications and possible improvements of existing methodologies for vulnerability analysis; the participation of the Caribbean Development Bank will be sought for such a meeting.

B. Description of UNDP, CARICOM, UNEP, UNDRO and possibly USAID inputs

1. Assignment of international staff

As mentioned above, during the first phase (the first eight months) of the project, when the emphasis is to be on disaster preparedness and short-term action generally, the disaster preparedness specialist will be the Project Manager. During the second phase of the project, the disaster prevention expert will take over this function. The Project Manager will be responsible for the detailed formulation of project activities and the assignment of specific tasks to the members of the regional team and short-term experts for the implementation of the project. He will supervise and co-ordinate all the project activities and report on progress made until completion of the project (see section E).

a) Preparedness Expert (Project Manager Phase I)

This expert will have extensive experience in the organization and running of emergency relief agencies, the formulation and implementation of emergency plans (including logistical aspects such as communications, transport, stockpiling of emergency supplies, rubble removal, short-term rehabilitation, etc.), the establishment of warning systems, the organization of evacuation operations, etc. He will have to travel extensively in the region.

b) Disaster Prevention Expert (Project Manager Phase II)

The expert shall have a university degree in physical planning and good experience in activities aimed at preventing the potentially disastrous effects of natural phenomena. He shall have experience in particular in such fields as risk analysis, the formulation of land-use legislation and zoning laws and the implementation of other preventive measures. As the physical planner on the team he will advise the participating countries on the best ways of adapting existing national legislations to specific disaster risks and of making use of the results of the work of the experts in seismology, volcanology, hydrology, meteorology and geology; he will co-operate closely with the national agencies in charge of regional and urban planning. He will have to travel extensively in the Eastern-Caribbean region.

c) Short-term Experts

1) Expert in hydrology (3 months): This expert will have a university degree and practical experience in applied hydrology. He will advise the participating countries and the regional team on the prevention of floods and landslides and, in co-operation with the expert in meteorology, on the possibilities for the establishment of flood warning systems, especially where flood risks may exist. He will work in close co-operation with the national, meteorological and hydrological agencies and those with responsibilities in physical planning.

ii) Expert in meteorology (3 months): This expert will have a university degree and practical experience in meteorology, particularly tropical meteorology and hurricanes. He will advise the participating countries and the regional team on possibilities for improving the existing system for the forecasting of potentially disastrous natural phenomena (tropical storms, hurricanes, etc.) and the dissemination of warnings. He will work in close co-operation with the meteorological agencies of the countries concerned.

iii) Geologist (3 months): This expert will have a university degree in geology and practical experience in such fields as the assessment of landslide risks. He will advise the participating governments on disaster risks due to specific geological conditions and measures to reduce such risks. He will work closely with existing institutions doing work in geology and with those responsible for physical planning.

iv) Expert in earthquake engineering (2 months): This expert will have a university degree and practical experience in seismology and earthquake engineering. He will, inter alia, provide advice to the participating countries and the regional team on the possibility of carrying out seismic microzoning studies in certain areas and translating them into adequate zoning laws. He will work closely with the Seismic Research Unit of the University of the West Indies in Trinidad and Tobago, making use of the results of their work, and with the various national agencies with responsibilities in physical planning.

v) Expert in volcanology (2 months): This expert will have a university degree and practical experience in volcanology. He will advise the participating countries where volcanic risks exist and the regional team on the nature and extent of these risks, and help in having them adequately taken into consideration in the various activities of the project. He will work in close co-operation with the Seismic Research Unit of the University of the West Indies in Trinidad and Tobago, the various national agencies with responsibilities in physical planning and the volcano monitoring project in Saint Vincent.

vi) Economist (3 months): This expert will have a university degree in economics and experience in disaster-related fields. His main task will be to assess the impact of natural disasters on the economics of the participating countries, taking into account both the direct and indirect effects, to make projections of the potential impact of future disasters and to draw conclusions for the long-term development policies of the participating countries. He will have to travel extensively in the region.

vii) Environmental engineer (3 months): This expert will have a university degree in environmental planning or natural resource management, or chemical or civil engineering, and experience in tropical ecosystems.

He will advise the participating governments and the regional team on the management of natural resources as buffers to mitigate the impact of natural disasters, the assessment of the environmental impact of developmental activities which could result in the deterioration of the ecosystems that act as natural buffers and the assessment of measures to restore natural ecosystems disrupted by the effects of disasters. Generally speaking, he will ensure that all prevention and preparedness measures recommended are compatible with environmental protection and sound environmental management practices.

viii) Expert in legislation and international agreements (3 months): This expert will have a university degree in law and practical experience in the formulation of international legislation and agreements. He will advise the regional team and the participating countries on the legal aspects of the mutual assistance agreements which might be concluded between the participating countries and of the possible establishment of a permanent regional machinery for natural disasters. He will also advise on such matters as the suppression of visa requirements for international relief teams and of import quotas and customs duties on relief supplies, the granting of overflight and landing rights to relief missions, etc.

ix) Other short-term experts: A total of 3 man-months are provided for the carrying out of specific studies which may prove necessary during the implementation of the project.

x) Travel and subsistence costs of the experts: In view of the need for the experts working within the project to travel extensively in the region, a total of \$10,000 is provided to cover travel and subsistence costs for the duration of the project.

2. Training provisions

The experts provided for in the project will give lectures in their respective fields of expertise: the organization, venue and timing of, as well as participation in, these meetings will be determined by the Project Manager in the course of the implementation of the project. In addition, a provision of 30,000 dollars is made for the organization of, and participation in, the above-mentioned seminars or meetings (para 2.c) p. 10).

3. Organization of three meetings of the project Advisory Committee

A provision of 15,000 dollars is made to cover the participation costs (travel and per diem) of two representatives from each country (see section B above) and of representatives of UNDRO, UNDP, CARICOM, and OFDA.

4. Supplies and equipment provided by contributing Agencies

<u>Expendable equipment</u>	<u>Delivery date</u>	<u>Cost</u>
Office supplies	November 1980	4,000
<u>Non-expendable equipment</u>	<u>Delivery date</u>	<u>Cost</u>
Typewriter	November 1980	500
Calculator	"	500
Other (books, etc.)	"	500
Car	"	6,000

5. Miscellaneous

A total amount of \$5,000 is provided for miscellaneous expenses, including maintenance of equipment and reports.

C. Government inputs

1. The government of the country where the project will be headquartered will contribute to the local costs of the project. In particular, it will provide a) one secretary and one driver; b) adequate office space and furniture; c) general expenses related to a) and b) above; and d) communications.

2. In addition, all participating governments will provide similar facilities to the project staff in the course of the missions which they will carry out in the various participating countries within the framework of the project. They will also make available the necessary local technical personnel as agreed in each case between the Project Manager and the government concerned, in consultation with the UNDP Resident Representative. Each government will also contribute to the dissemination of the results of the project in the course of its execution and afterwards.

D. Supervision and evaluation of the project

1. The Project Manager will prepare, in co-operation with the UNDP Resident Representative, progress reports on the activities of the project which will be submitted to the Executing Agency and considered at the meetings of the Advisory Committee (see section B). The first such progress report will be prepared after four months of implementation of the project, the second towards the end of the first phase (8 months), and the third one after one year. The final report will be examined jointly by UNDR0, CARICOM, UNEP, OFDA and the governments of the countries concerned for possible future action.

IV. PROJECT BUDGET COVERING UNDP, CARICOM, UNEP AND UNDR0 CONTRIBUTIONS

	Total		1980		1981		1982	
	mm	\$	mm	\$	mm	\$	mm	\$
10. PROJECT PERSONNEL								
11. EXPERTS								
11-01 Disaster prevention expert (Project Manager)	18	72,000	2	8,000	12	48,000	4	16,000
11-02 Preparedness expert	18	72,000	2	8,000	12	48,000	4	16,000
11-03 Hydrologist	3	12,000			3	12,000		
11-04 Meteorologist	3	12,000			3	12,000		
11-05 Geologist	3	12,000			3	12,000		
11-06 Earthquake Engineer	2	8,000			2	8,000		
11-07 Volcanologist	2	8,000			2	8,000		
11-08 Economist	3	12,000			3	12,000		
11-09 Environment Engineer	3	12,000			3	12,000		
11-10 Legal expert	3	12,000			2	8,000	1	4,000
11-11 Short-term experts	3	12,000			2	8,000	1	4,000
113 Administrative Support Personnel		10,000		1,000		7,000		2,000
116 Mission costs		10,000		1,000		7,000		2,000
119 Component total	61	264,000	14	13,000	46	198,000	11	48,000
130 TRAINING								
132 Seminars and meetings (a)		45,000				30,000		15,000
140 EQUIPMENT								
141 Expendable equipment		4,000		2,000		2,000		
142 Non-expendable equipment		7,500		7,500				
149 Component total		11,500		9,500		2,000		
150 MISCELLANEOUS		5,000		1,000		3,000		1,000
199 GRAND TOTAL		325,000		28,500		233,000		64,000

(a) including the meetings of the Project Advisory Committee

V. PROJECT BUDGET COVERING GOVERNMENT CONTRIBUTIONS IN-KIND

A. Contribution by each country to the servicing of the missions carried out by the regional team and of the three seminars

	Total		Total		Total		Total	
	mm	\$	mm	\$	mm	\$	mm	\$
<u>110 PROJECT PERSONNEL</u>								
111-01 Secretarial Staff	2	500			1	250	1	250
111-02 Driver	1	200			1	200		
111-03 Messenger	1	200			1	200		
119 Component total	4	900			3	650	1	250
<u>140 EQUIPMENT</u>								
141 Expendable equipment		500		100		200		200
143 Premises		2,000				1,500		500
149 Component total		2,500		100		1,700		700
<u>150 MISCELLANEOUS</u>		4,000		500		2,500		1,000
<u>199 GRAND TOTAL</u>	4	7,400		600	3	4,850	1	1,950

B. Additional contribution of the host country (provision of services to the headquarters of the project)

	Total		1980		1981		1982	
	mm	\$	mm	\$	mm	\$	mm	\$
<u>PROJECT PERSONNEL</u>								
101 Secretarial staff	18	4,500	2	500	12	3,000	4	1,000
102 Driver	18	3,600	2	400	12	2,400	4	800
103 Messenger	18	3,600	2	400	12	2,400	4	800
Component total	54	11,700	6	1,300	36	7,800	12	2,600
<u>EQUIPMENT</u>								
Expendable equipment		2,500		500		1,500		500
Premises		7,500		800		5,100		1,600
Component total		10,000		1,300		6,600		2,100

	Total		1980		1981		1982	
	mm	\$	mm	\$	mm	\$	mm	\$
MISCELLANEOUS								
Use and conservation of equipment	4,000		500		2,500		1,000	
Other	5,000		700		3,000		1,300	
Component total	9,000		1,200		5,500		2,300	
GRAND TOTAL	30,700		3,800		19,900		7,000	

IV. Emergency Operations Centers (EOC's) Summary Statement and Comments

One regional and 13 country EOC projects were submitted in this category. The regional project makes an interesting addition to the various proposals heard over time concerning the creation of a regional disaster organization or organizations for the Caribbean. It proposes the initial establishment of two regional emergency relief operations centers to serve as base stations for linkage to country communications centers, and, further, suggests that the center also so assume some responsibility for coordinating and promoting preparedness and prevention activities. As in the case of the more geographically limited project submitted by UNDR0, it warrants consideration when the question of appropriate disaster preparedness and prevention functions is more completely reviewed. This project does seem to have at least one advantage in its broad pan-Caribbean applicability. It is not unlike a plan being explored with interest in a preliminary way by the European Economic Community and the Office of U.S. Foreign Disaster Assistance in their roles as potential donor/support organizations.

Since an Emergency Operations Center is such an essential element in a national disaster preparedness system, it is assumed that other countries, beyond the 13 that have expressed interest in EOC projects, will upon review of the material developed so far, wish to consider becoming associated with the project.

As a final comment in this connection, most of the world's disaster experienced officials agree that a national EOC, no matter how modest, is essential to disaster relief response. In that context, the "EOC" is viewed as including not just the safe building, but the staffed disaster organization which accompanies it, the national and international relief systems employed and its communications and emergency power equipment.

Dalton

IV-R-1

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - EOC Workshop

Chairman - Stephen Tripp

- I. Title - Regional Coordinating EOC - Potential for two regional EOC's
- II. Description of need or problem:

Countries vary in size from a few thousand people to several million. Officials of a country may have to wear many hats; in some countries one Minister may have five portfolios, including disaster preparedness. Priorities are difficult to establish because of multiple demands for funds, facilities, and personnel.

The types of natural disasters that hit the countries of the Caribbean are hurricanes, sea surges, earthquakes, floods, landslides, volcanoes, forest, rural and urban fires. These disasters may affect several countries in a short period of time. In addition land, sea and air pollution as well as oil spills could affect several countries simultaneously. Air, land and sea transportation accidents of magnitude could require emergency assistance involving one or several countries.

- III. Description of project and objectives:

The two regional EOC's would establish communications links with the individual country EOC's in order to monitor all disasters affecting one or more than one country.

Existing regional and international agencies would be utilized as sources of funds and personnel to establish two regional EOC's with radio, telex and satellite communication capabilities. The Regional EOC's would establish communications links with the individual country EOC's.

Within technical assistance capabilities, the two EOC's would provide personnel for disaster planning, preparedness, prevention, and emergency operations programs throughout the countries of the Caribbean, and:

serve as catalysts for preparing, coordinating and promoting proposals and obtain funds for emergency preparedness projects; serve as a central agency to obtain and utilize experts from within and outside the Caribbean for disaster training and the conduct of seminars and conferences; set up plans and procedures to assist countries to test their disaster plans and preparedness programs; prepare and assist all Caribbean countries on projects to create public awareness of disaster risks, prevention, preparedness and emergency operations; serve as a focal point on scientific and technical knowledge, reference materials and the collection of all available data related to disasters in the Caribbean area; assist in preparing inventories of available capabilities, manpower and material resources; prepare manuals on all phases of disaster preparedness and emergency operations that are tailor-made to the needs to the countries of the Caribbean; establish a clearinghouse for scientific data and information to be disseminated to the countries concerned.

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

The countries to consider the regional EOC proposal and indicate their views.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

IV-C-1

Program Area - EOC, Anguilla Chairman - Stephen R. Tripp

I. Title: EOC, Communications, and Training

II. Description of need or problem:

In the event of a hurricane in Anguilla, a Control Room is established at the Police Headquarters to coordinate all activities related to the disaster. Unfortunately, the communications system which is used is based mainly on the use of telephones which would no doubt become in-operative once a hurricane had struck. The Control Room operates only before a hurricane. Proper communications equipment would enable the Room to be operated during and after a hurricane. There is no radio communication between the Hospital and the various District Health Centres which are used as First Aid Centres.

III. Description of project and objectives

The project objective is to establish an efficient system of communication which would link the Control Room (soon the EOC) to the various Police Stations, the Hospital and the various District Health Care Centres which are used as First Aid Centres. Because of the lack of local expertise it is necessary that some expert visit Anguilla to advise on the type of communication system best suited to our needs.

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

The Anguilla Government would put into effect a National Disaster Plan and would replace the Control Room with an EOC.

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

Because of Anguilla's financial position which arises from the undeveloped state of the Islands's economy, Government would find it extremely difficult to provide the necessary funds for the acquisition of the necessary equipment.

VI. External financial assistance/technical assistance:

- a) A survey of the Island's disaster communications needs.
- b) Provision of basic equipment for the setting up of a proper communications network.
- c) Training in the uses and maintenance of the equipment provided.

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

Chairman, Disaster Preparedness Committee, Chief Minister's Office.

Drafted by: Colville Petty

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Emergency Operations Centre Chairman - Stephen Tripp

I. Title - EOC Facility. Antigua

II. Description of need or problem:

The need of a permanent building, properly located and constructed, which will be used as the coordinating centre for Disaster Preparedness Activities.

Included among the activities will be the communications equipment, and a small secretariat for collecting and disseminating information locally; the maintenance personnel for communications and other equipment utilized at the centre.

This secretariat will also be the centre for frequent contact with local sub-centres (i.e. rural depots) and also with other regional EOC's.

III. Description of project and objectives:

The project is to locate an appropriate building in which to establish an EOC and to organize staff for maintaining it and to determine required action to be taken before, during and after an emergency

The EOC is to function as coordinating centre for local and regional communication.

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

Antigua will provide the personnel to man the EOC but will seek assistance for training personnel.

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

The EOC's is presently functioning out of Police Headquarters; this is not desirable nor does this arrangement work satisfactorily.

VI. External financial assistance/technical assistance:

Both financial and technical external assistance will be sought.

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

Ministry of Health.

Drafted by H.A. Barnes

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

IV-C-3

Program Area - EOC, Dominica

Chairman - Stephen Tripp

I. Title - EOC Facility, Communications, Equipment, Training

II. Description of need or problem:

The Government of Dominica needs an EOC to carry out the coordination of all actions involved in responding to disasters of all types. The EOC would serve to bring together government, voluntary and private agencies and individuals who would be assisting in the disaster preparedness and relief efforts. Through the EOC it would be arranged to collect, evaluate and disseminate information instructions and directions to the general public. The need is for a discrete place, well-designed for official use by the government leaders and designated disaster officers of the country. People who do not have official business at the EOC would not be admitted.

III. Description of project and objectives:

The first stage of the project is to survey the existing building where the present EOC is located to determine whether it is safe and suitable and, if it is not, to decide on another location or construction.

Secondary, the project calls for integrated communications at the EOC. This requires networks and levels with all emergency services, armed forces, police, fire, ambulances, Red Cross, search and rescue, as well as meteorological service, airports, etc. Regional and international networks would also be required.

The third stage is crisis management training, and specialized training for equipment operators and maintenance personnel.

Fourthly, all communications and EOC equipment would have to be provided with auxiliary power generators.

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

The government of Dominica would provide to the limit of its resources, internal technical assistance, operations and maintenance personnel, appropriate sites for EOC at headquarters and at field EOC stations. For example, local engineers and architects would be assigned to work on the survey of buildings and sites for EOC headquarters and local stations.

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

The justification for funds and technical assistance from outside sources is based on the fact that the country itself does not have sufficient funds to pay for these essential disaster preparedness components. Assistance would be requested from bilateral, regional and international sources.

VI. External financial assistance/technical assistance:

Funds would be needed from external sources for EOC equipment and supplies, auxiliary power generators, communications, technical assistance and training.

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

Ministry responsible for communications in collaboration with the Ministry of Home Affairs.

Drafted by: J. Lloyd

Caribbean Disaster Preparedness Projects Conference
Project Proposal

IV-C-4

Program Area - EOC

Chairman - S. Tripp

I. Title - Dominican Republic Project to Relocate Present Office Building

II. Description of need or problem:

At the present time the Dominican Civil Defense operates in a very old building, a private house which has been converted into an office building.

Due to the lack of space and the fact that the building cannot be remodeled, it has been impossible to establish a modern communications system and also impossible to install minimum facilities to operate an Emergency Operational Center and coordinate assistance in a disaster situation.

Moreover, the lack of space mentioned before does not allow the storage of equipment, food and other emergency articles.

III. Description of project and objectives:

Construction of a building with the characteristics and facilities of a Civil Defense Central Seat with the space to install an Emergency Operational Center and a Shelter Control Office.

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

The Dominican government contemplates building the center, but it is expected that they will need technical and financial help.

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

The relocation of the Dominican Civil Defense Center in a proper building would allow it to control the disaster, saving lives and goods and also would make it able to distribute international help in the most effective way.

VI. External financial/technical assistance:

Technical assistance could consist of modern building plans specially designed for a Civil Defense/Emergency Operational Center.

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

Dominican Civil Defense.

Drafted by: Pedro J. Polanco

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Emergency Operations Center Chairman - S. Tripp

I. Title - Development of Emergency Operations Center, Grenada

II. Description of need or problem:

Grenada needs an Emergency Operations Center (EOC) to facilitate the coordination of emergency actions before, during and following disasters of various types. The EOC would provide for the collection and dissemination of information through an integrated communications network and enable government agencies, voluntary organizations and private organizations to work together to meet the emergency needs of the population.

III. Description of project and objectives:

- 1) Survey of available buildings to identify one which could serve as the EOC because of its safe location and construction.
- 2) Improvement of emergency communications equipment, including the acquisition of emergency generators. An integrated communications system will be developed for the EOC.
- 3) A training program will be developed for officials who will participate in the operation and administration of the facility.

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

Designation of personnel for crisis management training.

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

Present facilities are inadequate to meet the needs of the nation in the event of major emergencies.

VI. External financial assistance/technical assistance:

- 1) Technical assistance for training EOC personnel,
- 2) Construction of disaster-resistant structure in the event that existing buildings are unsuitable,
- 3) Purchase of auxiliary generators.

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

Possibly Department of Development and Planning.

Drafted by: Roy A. Francis

Caribbean Disaster Preparedness Projects Conference
Project Proposal

IV-C-6

Program Area - Emergency Operations Center Chairman - S. Tripp

I. Title - Guyana, EOC

II. Description of need or problem:

Guyana is divided into six regions and the population is scattered throughout the length and breadth of these regions. At the moment immediate communication is not adequate and in time of a emergency it is absolutely necessary for immediate communication.

III. Description of project and objectives:

The objective of this project is to ensure immediate and clear communication between regions in time of disaster.

It is hoped that this system could be effectively interlinked with one of our already manned communication services. If this structure is possible then a minimal amount of training might be necessary.

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

To ensure that system is implemented and maintained.

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

Our body does not have enough resources to implement an additional source of this nature.

VI. External financial/technical assistance:

Not yet determined.

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

The implementation and manning of system to rest with the Ministry of Home Affairs.

Drafted by _____

Jamaica

I. Project Title: Establishment of Emergency Operations Center Facilities

II. Justification and Background:

While the Government's responsibilities and the functional delegation of those responsibilities do not change in a disaster, the need exists in disaster situation for rapid and co-ordinated activity involving separate entities. The proven means of achieving this is the establishment of an Emergency Operation Center within which facilities exist for expediting disaster operations, relief and recovery activities.

In Jamaica, the June Floods of 1979 led to the establishment of a temporary EOC and an EOC has been designated in the event of disasters in 1980. The Government is conscious of the need for the National EOC and Satellite EOC's in outlying parishes established following technical surveys and so prepared that they are capable of functioning in the potential future disasters.

III. Project Objectives and Description:

The objectives are to establish during 1980 a National EOC and Satellite EOC's in safe structures with adequate services for 24 hours per day operation in disaster conditions.

It is proposed that an expert will review with national personnel the sites/buildings proposed and make provision for establishing the required facilities (including equipment).

IV. Country Inputs:

The site and building designated or selected will provided by the National Government.

The Technical Advisor will be provided with local counterparts and local transport and office facilities within the Office of Disaster Preparedness.

V. External Inputs:

Provision of Technical Expert in Emergency Operation Center establishment and operation for a period of 8-12 weeks in first instance for selection of sites and 4-6 months for establishment of facilities and training of local staff.

Provision of equipment of EOC (Communication, Stand-by Power, etc.).

VI. Justification for External Support/Interest:

The program has marginal regional interest. The external support is required due to lack of local experience in this area. Equipment requirements may be detailed and subject to further bilateral discussions.

VII. Agency Responsible:

Office of Disaster Preparedness in collaboration with the Ministry of Construction.

IV-C-9

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - EOC

Chairman - S. Tripp ,

I. Title - Training of EOC Staff in Jamaica

II. Description of need or problem:

EOC operations require rapid execution of policy in the midst of a crisis. In order to ensure the level of efficiency desired, "crisis management" training is proposed.

III. Description of project and objectives:

The alternative is to provide as soon as possible a core of national staff capable of coping with extreme conditions and of providing basic training to other nationals in this area.

The project may be executed by having nationals participate in a national/regional training program and following this up with simulation exercises.

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

Jamaica would nominate and support nationals capable of effectively absorbing the training proposed. If a National Program is decided upon facilities for the program may be available from training facilities in the Public Sector.

Support for the technical experts may also be available locally.

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

It may be possible to carry out this exercise partly as a regional activity if sufficient demand exists. The evolution of a "crisis management manual" for Caribbean disaster training may be also a desirable regional objective.

VI. External financial/technical assistance:

Technical Experts for training program and simulation based on local disaster scenario.

External assistance is essential to provide a full range of disaster related case experience.

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

Office of Disaster Preparedness.

Drafted by: Jacqueline Mayers

IV-C-10

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

Program Area - Emergency Operation Centre Chairman - Stephen Tripp

I. Title - Montserrat Emergency Operation Centre

II. Description of need or problem:

The Emergency Operation Centre in Montserrat is located at the Police Headquarters. The structural resistance of the building to hurricanes and earthquakes is questionable (See conference document, Caribbean Disaster Preparedness - A Summary, Section VII).

Although there are communication links between Police Headquarters and other police stations the equipment is not always in working order. Consequently the system is unreliable.

Crisis management training is lacking.

Montserrat needs a disaster resistant EOC, a reliable communication system and training in crisis management and maintenance of equipment.

III. Description of project and objectives:

The project aims at:

- a) determining the structural suitability of the EOC and making it disaster-resistant;
- b) examining the efficiency and effectiveness of the communication system in terms of its equipment and ability to link the various units into an integrated system which will remain in operation before, during and after a disaster and to upgrade and make the system effective and efficient;
- c) determining the specific training needs in crisis management and training in maintenance of equipment and providing such training.

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

The country is to revise its national disaster plan. The EOC is likely to remain at Police Headquarters. All assistance will be given to facilitate the survey.

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

Due to limited financial and other resources outside assistance is required to carry out the survey and to:

- a) make the EOC disaster resistant;
- b) upgrade the communication system by provision of new and additional equipment, e.g., C.B. radios, portable generators, etc.;
- c) carry out training required.

VI. External financial assistance/technical assistance:

Estimate of cost of project to be provided on completion of survey.

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

The Secretary, Disaster Preparedness Committee

Drafted by: F. Farier

Caribbean Disaster Preparedness Project Conference
Project Proposal

IV-C-11

Program Area - EOC, St. Kitts & Nevis

Chairman - Stephen Tripp

I. Title - EOC Communications and Training

II. Description of need or problem:

The Police Headquarters at Basseterre is designated as the EOC. It is located in a solid building.

Emergency communications are designed to maintain contact with all police stations and mobile equipment on St. Kitts and Nevis, but the system is old and is not functioning satisfactorily.

Hurricane instructions are issued annually and are broadcast over the nationally-owned and operated radio and TV networks.

III. Description of project and objectives:

Project objective is to augment existing Police Headquarters to include space for Chairman and Disaster Preparedness Committee with radio communications to local chairman of disaster preparedness committees in each community. Each local committee consists of Chairman, health and first aid person, sanitary inspector, nurse, and police officer.

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

The country is now preparing a national disaster plan. It will designate an EOC at Police Headquarters.

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

Outside assistance is required for improved radio equipment and installation of an active repeater. The Police Headquarters building needs to be surveyed to determine its disaster-resistance; shutters are required for windows. Training assistance is required. Disaster preparedness, EOC operations and crisis management manuals are required.

VI. External financial assistance/technical assistance:

To procure radios, active repeater, disaster-resistant shutters, technical assistance on EOC design, operation and maintenance. Provision of operations and technical manuals. Design of programs for public awareness.

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

Chairman, Disaster Preparedness Committee, Ministry of Home Affairs.

Drafted by: Ian Hodge

IV-C-12

Caribbean Disaster Preparedness Projects Conference
Projects Proposal

Program Area - EOC

Chairman - S. Tripp

I. Title - Emergency Operations Facility, St. Lucia

II. Description of need or problem:

EOC facility needed at central location with integrated communications network where officials and disaster experts will be able to coordinate, direct and control manpower and material resources to provide public with warnings, instructions, protection and security services, care of injured, movement from threatened or destroyed areas and shelter, clothing, food and life support services.

III. Description of project and objectives:

Part 1 - Designate existing disaster-resistant structure in safe place with adequate space for EOC and Headquarters. If none available, develop project for construction of structure.

Part 2 - Provide communications central nationwide, regional, and international capabilities to communicate before, during and after a disaster on a 24-hour a day basis.

Part 3 - Provide for auxiliary power to serve EOC and headquarters.

Part 4 - Establish a crisis-management training program, including provision for technical operations and maintenance training.

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

Provide space in disaster-resistant structure, located in safe, readily accessible place.

Integrate existing communications networks for emergency disaster purposes.

Designate personnel for crisis-management and specialized training.

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

Existing arrangements for emergency/disaster relief operations are unable to cope with the needs and demands for nationwide coordination and direction of public, voluntary and private manpower and material resources.

VI. External financial assistance/technical assistance:

Funds for construction of disaster-resistant structure for emergency operations center and headquarters. Funds for procurement of auxiliary generators and mobile power units.

Technical assistance in design and establishment of EOC for crisis management training and technical and operations maintenance training.

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

Central Emergency Assistance Organization, in collaboration with Ministry of Planning, Ministry of Finance, and Development.

Drafted by: EOC Workgroup

IV-C-13

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Emergency Operations Center Chairman - S. Tripp

I. Title - Turks and Caicos Islands - EOC

II. Description of need or problem:

The population of the Turks and Caicos Islands is distributed through seven islands. On three of the islands the population is in scattered settlements with a distance of several miles between each settlement. While there is, under normal conditions, a reasonably good telephone link between Grand Turk, South Caicos and Providenciales, the remaining islands of Salt Cay, Middle Caicos, North Caicos and Pine Cay have only three telephones among them. At best, therefore, communications with some of the islands are poor and there is a pressing need for an operations center which can operate effectively in times of emergency.

III. Description of project and objectives:

The objective of the project is to establish on Grand Turk, where half the population of the islands lives, an Emergency Operations Center which will be the immediate control center for Grand Turk and a general monitoring station for the outer islands.

The intention is that through the project a Controller/Operations manager will be trained to set up and administer the Center. On completion of training it will be the responsibility of this man to instruct Emergency Station Managers for each of the outer islands.

The project also includes the provision of suitable communications equipment for the Center in Grand Turk and each Station in the islands, together with the training of suitable personnel for operating and maintaining the equipment.

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

Government would find a suitable building to house the project in Grand Turk and find accommodation in the islands for the stations there.

It is the intention that the officer trained as the Operations Manager would operate in a part time capacity for nine months of the year but would be deployed full time to the Center and Stations for the period August through October each year.

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

The government of the Turks and Caicos Islands does not have the resources to implement the project. It is submitted that for humanitarian reasons an external agency might be found to fund this project. Also in the event of a disaster striking the islands and this facility not being available, the ultimate cost to the international community could prove to be several times the cost of this project.

VI. External financial/technical assistance:

Not yet determined.

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

The implementation and control of the project would rest with the Office of the Chief Minister.

Drafted by: R.J. Halstead

V. Public Awareness
Summary Statement and Comments

Four regional projects to increase public awareness of disaster matters were prepared. The principal project suggests establishment of a Caribbean Center for Information on Natural Disasters, which, with a staff of 6, would require funding of one million dollars (\$1,000,000) for the first five years. Perhaps this organizational proposal should be included in broader consideration of regional disaster organizational support requirements.

Other projects propose a survey of existing written disaster materials for the training of media personnel, and the promotion of public awareness through preparation of a film on hurricane David. Jamaica proposes an in-country program entitled "Raising the Level of Public Awareness of Disaster History; the Level of Risk and Preparedness Measures."

It was suggested that such a project might constitute a regional or international effort.

Dalton

Caribbean Disaster Preparedness Projects Conference
Project Proposal

V-R-1

Program Area - Public Awareness

Chairman - Grace Pilgrim

I. Title - Establishment of a Caribbean Center for Information on Natural Disasters

II. Description of need or problem:

There is a general absence of disaster consciousness in the region with inadequate knowledge of the natural disasters which may affect the respective countries and of the nature and measure of the damage which are likely to follow these disasters.

There are few education programs geared to creating the kind of public preparedness which promotes confidence, mitigates damage and injury, or saves lives.

It is universally accepted that the need to remedy the present shortcomings is urgent and true urgency has been underscored by the findings of the assessment teams which visited Caribbean territories in late 1979.

III. Description of project and objective:

The project aims at remedying the situation outlined above by:

- a) establishing a depository for information, including literature, tapes, bibliographies;
- b) by distributing such information; and
- c) conceiving programs of training, instruction and information.

The center will be responsible for preparing or having prepared literature, audio-visual materials, and exhibitions and for promoting such events as special days.

To this end, an office initially comprising six positions should be set up in a Caribbean territory. The staff will consist of a Director, an Assistant Director, a librarian, an Executive Officer, a steno-typist, and a maid.

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

The country in which the center is based will provide office accommodations.

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

The project impinges upon all aspects of disaster preparedness. Without an effective campaign to develop public awareness, other improvements may probably amount to little more than tinkering and are bound to be less than satisfactory. Without institutional support the effort is likely to be still-born.

VI. External financial/technical assistance:

Full cost of the project to be borne by external sources for the first five years of the project.

The amount of assistance for the project will depend upon the number of factors, some unknown, but the total cost of the project may be estimated at US\$ 1m.

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

USAID, CIDA, UNDP.

Drafted by: C.L. Ince

Caribbean Disaster Preparedness Projects Conference
Project Proposal

V-R-2

Program Area - Public Awareness

Chairman - Miss G. Pilgrim

I. Title - Survey of Information

II. Description of need or problem:

See Centre Project

III. Description of project and objectives:

There is perhaps a great deal of information on natural disasters which is scattered higgledy-piggledy across the Caribbean . If such a body of information exists it should be identified and its whereabouts made known to the Emergency Organizations and Governments of the Caribbean.

This is an essential early step in establishing an effective Caribbean Centre for Information on Natural Disasters.

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

All countries will cooperate in the project by making their libraries, archives, etc. accessible to the researchers.

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

See Centre Project.

VI. External financial assistance/technical assistance:

UNDP to bear the cost of research. Estimated cost US\$ 12,500.

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

UNDP - (Researcher to be identified) UNDRO

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Public Awareness

Chairman - Grace Pilgrim

i. Title - Training for Media Personnel

ii. Description of need or problem:

There is a general absence of disaster consciousness in the region with inadequate knowledge of the natural disasters which may affect the respective countries and of the nature and measure of the damage which are likely to follow these disasters.

There are few education programs geared to creating the kind of public preparedness which promotes confidence, mitigates damage and injury, or saves lives.

It is universally accepted that the need to remedy the present shortcomings is urgent and urgency has been underscored by the findings of the assessment teams which visited Caribbean territories in late 1979.

Disaster preparedness education is, however, a specialized area and the Secretariats of Government Emergency Organizations should devise training programs in conjunction with international organizations for attachment of members of the private news media and personnel of Government Information Services.

iii. Description of project and objectives:

Training in disaster publishing and broadcasting, including the specific topics of disaster management and disaster research. Public administration should be an important aspect of the training.

The training should be a mix of attachments, fellowships and seminars.

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

Provision of accommodation for seminars and attachments.

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

See Centre Project.

vi. External financial/technical assistance:

6 attachments -	US\$ 12,000	
3 fellowships -	7,500	
2 seminars -	<u>30,000</u>	
	<u>49,000</u>	(Say \$50,000)

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

UNESCO, UNDRO, UNDP (regional and international level)

Individual countries (e.g. USA, Barbados) at sub-regional level.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

V-R-4

Program Area - Public Awareness

Chairman - Miss G. Pilgrim

I. Title - Production of Films - Film #1 - David, David

II. Description of need or problem:

See Centre Project.

III. Description of project and objectives:

Undertaking to prepare a film on Hurricane David will involve the collation of information, including visual material, and will necessarily bring Caribbean Emergency Organizations into indirect contact. Beyond research problems, it is also likely to unearth problems with respect to communications, planning, etc., and might prove an instructive case study.

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

See VII below.

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

Copies of the film will be made available to all Caribbean territories and appropriate international organizations. The effort will provide mutually beneficial as it will enhance the image of international organizations in the area by demonstrating their usefulness in times of need. The film's likely impact will promote a public awareness far greater than any other project which may be conceived at this time. (If another natural disaster strikes before the completion of the film, then that disaster should be recorded on film and a decision taken whether to postpone or cancel David, David.)

VI. External financial/technical assistance:

The cost of making the film should be born by an international organization such as the EEC or UNDP (UNEP). The international organization should provide equipment and raw stock, and such additional personnel as may be required. (See VII). Estimated cost US \$60,000.

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

Government Information Service, Barbados in collaboration with organization(s) at VI above.

I. Title - Raising the Level of Public Awareness of Disaster History, Level of Risk and Preparedness Measures

II. Justification:

Public knowledge of disaster causes and preparedness measures is inadequate and the need exists to expand the level of information available on national disaster/histories and mitigation techniques.

III. Description of Project Objectives:

The objective is to reduce disaster vulnerability by increasing the public's capacity to anticipate and cope with extreme conditions.

The project will require a broad subject matter approach to public awareness along the lines proposed in the recommendations of the St. Lucia Seminar. In the short run it is suggested that material on regional disasters be given wider regional exposure by audio-visual techniques, and that local experts participate in public discussions of disaster agents.

IV. Country Input:

The local media organizations will be requested to provide regular public information on disasters in a responsible manner and develop local disaster preparedness material with the assistance of international experts.

V. External Input:

Providing suitable material already available in the world on regional disasters and on specific disaster types threatening the region.

Expertise to assist in the development of suitable public information disaster releases.

VI. Justification for External Interest/Support:

This project deserves consideration for a regional application and international support, since the public's roles in pre- and post-disaster planning are undeveloped. Common material may be developed for the West Indian Islands.

VII. Agency Responsible:

National Offices of Disaster Preparedness, Ministries of Governments, and Community Development in collaboration with national and international Public Information resources.

VI. Seismology Summary Statement and Comments

Four projects were submitted in this category; volcanological considerations were limited to the sites of the active volcanoes in the region, but those dealing with earthquakes are of region-wide importance. Projects include a regional study of seismic volcanic risk and the compilation of a semi-technical risk history for the region, improvements in advance warning of volcanic activity in the Lesser Antilles, seismic monitoring of the Oriente Fracture Zone Seismicity Gap (responsible for some of the worst disasters in the Caribbean) and improvement in the seismic resistant design of buildings. A project is also proposed for the collection of earthquake strong motion data which can be applied in both design and construction practices and over time can substantially reduce disaster damage from earthquakes.

Dalton

VI-R-1

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Public Awareness (Seismology/Volc.) Chairman - John Shepherd

I. Title - Dissemination of Information on Regional Seismic/Volcanic Risk

II. Description of need or problem:

The Caribbean region is subject to the risk of both earthquakes and volcanoes. There are few major cities which have escaped devastation by earthquakes in the last 300 years. Volcanic effects are localized mainly in the eastern Caribbean islands, but have in the past been associated with major disasters (Mt. Pelee, 1902, 28,000 casualties). Tidal waves (tsunamis), landslides and other secondary effects such as liquefaction are known to accompany major seismic events in the region.

Information on the history and level of risk and the potential effects of seismic/volcanic events on the human and physical systems exists, but to a great extent is not available to the general public in the region. There is need for the existing data to be compiled and packaged in a form that the general public can rapidly assimilate in order to be informed of this area of disaster risk.

It should be noted that one of the world's "seismicity gaps" exists in the region.

III. Description of project and objectives:

The project will lead to the compilation, publication and dissemination of copies of a semi-technical document setting out the seismic and volcanic disaster history of the region. The publication will be in English and Spanish to facilitate wide circulation to the population.

The project can be executed in nine months from the time of funding if done on a part-time basis, or four months if full-time staff is assigned.

The publication will be presented in a format which will have popular appeal and will incorporate photographs and maps to complement the text. It is suggested that the presentation aim at the widest possible audience and be on glossy paper to enhance its appeal.

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

Regional and national organizations concerned with seismic and volcanic research will ensure that all relevant material be made available to the executing agency. The regional/national bodies will need to assign a seismologist familiar with the region's seismicity to lead the project.

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

The seismic/volcanic hazard is not confined by national boundaries and represents a common problem. The project is considered to have a large cost/benefit ratio as the availability of the information will lead to other preparedness activities and ultimately saving of life and reduction of property damage.

VI. External financial assistance/technical assistance:

Funding of the production cost (est, US\$ 25,000), providing assistance particularly in the production of maps. Budget (Provisional):
Seismologist \$10,000, Publication \$15,000 = \$25,000.

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

Seismic Research Unit in collaboration with other national and regional organizations (USGS, Lamont and National Geological Surveys).

Caribbean Disaster Preparedness Projects Conference
Project Proposal

VI-R-2

Program Area - Seismology

Chairman - Dr. J.B. Shepherd

I. Title - Improvement of capability for advance warning of volcanic activity in the Lesser Antilles

II. Description of need or problem:

Six of the lesser-developed countries of the Lesser Antilles (St. Kitts, Nevis, Anguilla, Montserrat, Dominica, St. Lucia, St. Vincent and Grenada) contain at least eleven, and possibly as many as thirty, potentially active volcanoes. Five of these volcanoes have erupted violently within the past 200 years. The adjacent French and Dutch islands contain at least four more volcanoes of which two have erupted in the same time period. The percentage of a minimum of 20% to a maximum of 100% (Nevis) and the total death-toll from volcanic activity in this region in the twentieth century exceeds 33,000. Within the past decade alone there have been three occasions (St. Vincent 1971 and 1979, Guadeloupe 1976) when the real or imagined event of volcanic activity has caused large scale evacuation of threatened areas.

The principal method of monitoring these volcanoes in order to provide advance warning is by means of a seismograph network telemetered to the University of the West Indies in Trinidad. This project aims at improving the effectiveness and reliability of the network.

III. Description of project and objectives:

To provide reliable telemetry links between eleven main volcanic sites in the Lesser Antilles and the University of the West Indies in Trinidad. Sensors are already in place and the effectiveness of the system was demonstrated in 1979 when advance warning of the eruption of Soufriere volcano in St. Vincent was provided. However, the existing telemetry system is vulnerable to other natural hazards such as hurricanes and was damaged by hurricane David in August 1979. Funds are requested to provide telemetry links by earth satellite which would be immune to such threats. Objectives are to provide advance warning to governments and responsible agencies of possible volcanic disasters.

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

Operation of the system will be carried out by personnel of the University of the West Indies, an organization jointly funded by fourteen regional governments.

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

Volcanic eruptions threaten almost all countries of the Eastern Caribbean and the project would benefit all these countries. Experience gained would be useful to other countries faced with similar threats (e.g., the USA, Central America, Indonesia, Philippines, etc.).

VI. External financial assistance/technical assistance:

Financial and technical assistance to establish the regional satellite telemetry links. The technology exists and has been proven. Costs are unknown at this stage.

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

Seismic Research Unit of the University of the West Indies in collaboration with regional governments.

Drafted by: John B. Shepherd

Program Area - Seismology

Chairman - J.B. Shepherd

- I. Title - Seismic Monitoring of the Oriente Fracture Zone Seismicity Gap
- II. Description of need or problem:

The Oriente fracture zone is a large, submarine transcurrent fault which runs from Haiti to a point due south of Grand Cayman. Historically, earthquakes along this fault have been responsible for some of the worst disasters in the Caribbean area. Within the past 300 years the cities of Port-au-Prince (Haiti), Santiago de Cuba, Port Royal and Kingston (Jamaica), have all been devastated at least once. For at least the past 20 years seismic activity along this fault has been much lower than is suggested by historical records. A widely-accepted theory suggests that seismicity "gaps" such as this are terminated by major earthquakes. There is a need to improve seismic monitoring of this region in order to determine: a) whether the "gap" is genuine or is a result of inadequate data collection; b) if the gap is genuine, to be prepared for re-awakening of activity.

- III. Description of project and objectives:

Seismic activity along the Oriente fracture zone (OFZ) is currently monitored by a seismic network in Jamaica and one independent station in Cuba. This system is inadequate. It is desirable to upgrade the network by adding seismograph stations in Swan Island, Grand Cayman, Cayman Brac, Haiti (2) and the southern Bahamas or Turks and Caicos Islands. All stations should be telemetrically linked to a central recording station at which experience in the interpretation of seismograph records exists. Objectives of the program are as stated in II.

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

Operation of the network will be carried out by the Seismic Research Unit of the University of the West Indies in collaboration with the Government of Jamaica and the governments of Cuba, Haiti, the Bahamas, the Cayman Islands and the government responsible for the administration of Swan Island.

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

The OFZ poses a threat to at least five circumadjacent countries.

- VI. External financial assistance/technical assistance:

Technical assistance required to determine the optimum method of data transmission from the sites named in III to an already existing data-collection point in Jamaica. Technical and financial assistance required to implement the data transmission system.

VII. Designation of Agency responsible for carrying out the project:
Seismic Research Unit, U.W.I.

Drafted by: J.B. Shepherd

Caribbean Disaster Preparedness Projects Conference
Project Proposal

VI-R-4

Program Area - Seismology

Chairman - J.B. Shepherd

I. Title - Collection of Earthquake Strong-motion Data for Improvement of Earthquake-resistant Design in the Caribbean

II. Description of need or problem:

Worldwide and particularly in the United States, the single most important factor in the mitigation of earthquake disaster by improvement of earthquake-resistant design of buildings has been the collection of records of strong ground motion during significant earthquakes. Many such records exist for U.S. earthquakes but almost no records are available for Caribbean earthquakes. Those records which do exist suggest that there are important differences between Caribbean earthquakes and earthquakes in other parts of the world. Some regional governments (e.g. Jamaica, Trinidad, and Tobago, Barbados) have recognized the need for collection of strong-motion data and about 25 instruments for the collection of such data are already in place. There is a need to extend instrumental coverage to the rest of the Caribbean, particularly to the island of Hispaniola and to the Lesser Antilles.

III. Description of project and objectives:

To establish 50 additional strong-motion accelerographs and 50 seismoscopes in regions of the West Indies which do not already have such instruments to provide facilities for processing of data collected by such instruments. Objectives are to provide a data-base for improvement of earthquake-resistant design in the Caribbean.

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

Regional governments will be responsible for selection of sites for instruments, routine maintenance and logistical support for project personnel.

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

Earthquakes affect all countries of this region and the data collected will be available to all.

VI. External financial assistance/technical assistance:

Financial = US\$ 75,000 for hardware, + 15,000/year for maintenance and data reduction. Technical assistance from organizations experienced in processing of strong-motion data (e.g. U.S.G.S, U. of California at Berkeley, U.S.C., Cal Tech).

VII. Designation of Agency responsible for carrying out the project:
U.W.I.; SRU

Drafted by J.B. Shepherd

VII. Disaster Health Care
Summary Statement and Comments

Two projects were submitted in this category. A major pan-Caribbean health preparedness program proposal carrying the title "Health Emergency Preparedness in the Caribbean" suggests that in each country the executing agency be the Ministry of Health. These organizations would receive professional technical, financial, and administrative support through bilateral, regional and international arrangements. Pan American Health Organization and CARICOM technical assistance is judged to be an essential component of that plan. Implementation of the project would entail a number of country projects that would have to be scheduled for implementation on a regional basis.

The Dominican Ministry of Public Health and Social Assistance submitted a project entitled "Priority Health Needs in Disaster Prevention in the Dominican Republic." It is, like the regional project, a comprehensive proposal involving training and provision of equipment and supplies.

Dalton

A national plan associated with training in the health sector will reduce casualties and damages to essential services and facilities.

III. Description of project and objectives:

Objectives:

1. Promote disaster planning in the health sector.
2. Provide minimum training to health officials at all levels.
3. Include emergency preparedness in health education programs directed to the general public.
4. Assess the vulnerability of health and related services and strengthen the disaster response operational capacity.

Activities:

1. To strengthen or establish a sectoral and regional disaster plan and a technical program of emergency preparedness within the health sector of the countries. The Ministries of Health will be encouraged to assign this responsibility to a senior health official, as the limited resources normally will not justify a full-time post at country level. The possibility of employing an official to serve two or more countries on a full-time basis will also be investigated.
2. To review the existing disaster emergency legislation relevant to the health sector, particularly in regard to receiving or providing relief assistance.
3. To adapt the regional or general manual and training material presently available or in development under the PAHO regional program to the distinctive features of each national situation.
4. To formulate technical guidelines for disaster relief in the health field (completion of the standard list of drugs and equipment, standardization of the medical treatment of mass casualties, etc.).
5. To conduct national inventories of back-up equipment against anticipated needs such as human resources available and local and foreign sources of assistance.
6. To conduct training sessions for health-related officials at all levels, including managers/coordinators, hospital administrators, utility managers and sanitary engineers, logistic and supply managers, paramedical personnel (nurses, public health inspectors, health educators, etc.)
7. To develop simple educational materials for the benefit of the general population.
8. To encourage the participation of the scientific community in applied research and technical evaluation of the material developed, and include disaster management in curricula of medical, nursing, engineering, and other health related schools.
9. To study the cost effectiveness and feasibility of establishing stockpiles of essential emergency equipment, i.e. laboratory supplies, sanitary engineering equipment, drugs, field communication sets, etc. at national or regional levels.

10. To establish guidelines for making disaster-proof certain essential elements of health facilities/utilities which will include survey of vulnerability of existing facilities and recommendations for their improvement, and inclusion of disaster-prone factors in the design of new facilities/utilities of the health sector (e.g. hospitals, clinics, water treatment plants, etc.).
11. To award scholarships/fellowships to nationals from member countries to participate in courses/seminars on disaster assessment and management organized outside the region.
12. To constitute a regional health assessment team with communication and transport support to assist the affected country in times of disasters.
13. To train selected nationals to constitute a source of stand-by expertise and a local team to undertake the assessment of the needs in the health sector following the impact of a disaster.

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

- designate an official responsible for emergency preparedness activities in the health sector who will act as a focal point/coordinator in case of disaster
- provide funds for the training activities undertaken at country level
- facilitate the entry (waiver of custom duties and immigration requirements) of personnel and equipment for the project in case of disaster.

V. External financial/technical assistance: (5 years)

	Total US\$
Project Manager, including travel, (technical cooperation, general coordination of activities), social benefits, pensions, etc.	350,000
Secretarial support	50,000
Technical consultants	100,000
Local transportation services	20,000
Seminars/courses/training:	
One annual course at Caribbean level (5 days, 40 participants)	220,000
Two national courses (5 days 20 participants)	150,000
Documentation, manuals, visual aids	90,000
Feasibility studies (stockpile)	10,000
Development of model plans, testing and research	80,000
Disaster assessment team training/logistics support	100,000
Analysis of vulnerability of essential services	15,000
Survey and advice on disasters for essential facilities	150,000
 Subtotal	 1,335,000
Miscellaneous, contingencies (20%)	US 267,000
Total	1,602,000

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

Execution and Evaluation at Regional Level

- Emergency preparedness being essentially a component of each health program, the proposed project will be integrated into other activities carried out at country level with PAHO technical cooperation (especially development of health services, environmental health, and disease control).
- Direct supervision will be exercised by the PAHO Area and Country Program Coordinators/Representatives.
- Technical supervision and support will be provided by the PAHO Regional Advisor on Emergency Preparedness, in addition to that provided by the Program Manager recruited for this program.
- A special advisory committee with participation of national experts, CARICOM and other agencies will be established.

Execution at National Level :

- The Ministry of Health.

*República Dominicana**Secretaría de Estado de Salud Pública y Asistencia Social***Atención de Salud en Relación al paso
del huracán "David"****1. Introducción:**

La República Dominicana está ubicada en la isla "La Española", la segunda en tamaño después de Cuba y forma parte del grupo de islas llamado "Antillas Mayores". Tiene una superficie de 48,442 Km², ocupa aproximadamente las 2/3 partes de la isla, de la cual le corresponde la parte oriental, con una población estimada al 10/Julio/1979 de 5,275,410 habitantes.

El país está dividido políticamente en un Distrito Nacional y 26 Provincias. Las Provincias se dividen en municipios con un total de 98 municipios.

Por su situación geográfica la República Dominicana está expuesta al paso de los huracanes, tormentas, etc. que se originan en estas regiones, provocando problemas generales y de salud de diferente amplitud e intensidad.

Las acciones de salud tienen singular importancia en las situaciones de desastres, ya que directamente o coordinadas con las de otras instituciones u organismos contribuyen a salvar vidas y a evitar enfermedades.

2. Secretaría de Estado de Salud Pública y Asistencia Social.

Es la responsable de proteger y promover la salud en todos sus aspectos.

Estructuralmente mantiene tres niveles administrativos-operacionales.

Un nivel central : normativo nacional

Un nivel regional : normativo regional

Un nivel de área : ejecutivo.

El nivel regional está constituido por 6 regiones de salud que abarcan todo el país desde la 0 hasta la V. Actualmente se está en proceso de re-estructuración para distribuir el país en 8 regiones en lugar de 6.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

Cada región de salud está a su vez constituida por Areas de Salud, que corresponde cada área a una provincia de la división política del país.

3. Recursos Generales de Salud Pública.

Número de establecimiento, camas, médicos y enfermeras por Regiones de Salud, R. D.

1979.-

REGION	ESTABLECIMIENTO CON INTERNAMIENTOS	ESTABLECIMIENTO * SIN INTERNAMIENTOS	TOTAL	No. DE CAMAS	MEDI COS.	ENFER MERAS	CLINICA RURALES
0	16	19	35	3,029	535	1,625	18
I	15	7	22	670	173	448	56
II	17	5	22	1,717	467	1,235	54
III	14	3	17	697	228	521	58
IV	9	0	9	238	113	240	30
V	11	3	14	380	154	339	43
VI	6	1	7	340	95	233	23
VII	9	2	11	349	100	224	22
TOTAL	97	40	137	7,420	1,865	4,865	304

*Centros de salud, Subcentros, Dispensarios!-

Aparte del personal médico y de enfermeras de cada Clínica Rural actualmente se cuenta con 5,000 Promotoras Rurales de Salud, voluntarias de las comunidades rurales que prestan atención primaria a la Población rural dispersa.

La mayoría de los establecimientos con internamientos tiene servicios de ambulancia.-

4.

ORGANIZACION Y FUNCIONES

El Secretario de Estado de Salud Pública formó parte, presidiéndola, de una Comisión Nacional de Salud designada por el Poder Ejecutivo, junto al Director del Cuerpo Médico y Sanidad Militar - de las Fuerzas Armadas, el Director General del Instituto Dominicana de Seguros Sociales, el Presidente de la Cruz Roja.

Internamente, la extrutura organica de la SESPAS a alto nivel era normalmente la siguiente: Un secretario de Estado; tres - Subsecretarios de Estado, uno del Area de Asistencia Social, y otro Administrativo, y otro del Area de la Salud.

La Subsecretaria del Area de la Salud tenía a su vez dos Directores Generales, uno de Atención Médica y otro de Programas Normativos.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

SECRETARIO

SUBSECRETARIO DE SALUD

SUBSECRETARIO ADMINISTRATIVO

SUBSECRETARIO DE ASISTENCIA SOCIAL

SUBSECRETARIO DE SALUD

DIRECTOR GENERAL

DIRECTOR GENERAL DE

Al pasar el huracán, dada la situación de catástrofe nacional, y - después de varias tentativas, esta estructura normal fué modificada por una de emergencia que permitía agilizar mas la dinámica de las acciones.

Esta nueva estructura organica estaba constituida por una COORDINACION CENTRAL integrada por los tres Subsecretarios de Estado, con la responsabilidad máxima de carácter ejecutivo y operativo, que servía de soporte al Secretario de Estado.

La Coordinación Central a su vez tenía el apoyo de tres áreas operativas: El área de Asistencia Social, el área de Atención Médica y Saneamiento Ambiental y el Area de Apoyo Administrativo; cada una con su correspondiente Jefe de area:-

También se creó un Comité Asesor que servía de apoyo tanto a la coordinación Central como a las Jefaturas de los tres áreas. Además se creó un Comité de Coordinación de Ayuda Externa presidido por el Secretario de Salud, para canalizar los aportes de ayuda foránea!

Las responsabilidades generales de las tres areas operativas eran las siguientes:

- Generar actividades para atender las urgencias en el orden de su gravedad.
- Obtener aprobación de la Coordinación Central.
- Solicitar y utilizar los recursos necesarios.
- Ejecutar las actividades de su área y estas con las de otras áreas y organismos. Ejecutar las actividades operativas por la Coordinación Central
- Informar todo lo necesario a la Coordinación Central.
- Aprovechar los aportes de los órganos asesores y de coordinación de ayuda externa.

Con ésta estructura de emergencia las acciones de saneamiento Ambiental de la Dirección General de Programas Normativos pasará al Area de Atención Médica.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

Las demás acciones de la Dirección General de Programas Normativas (Epidemiología, Educación, Nutrición, Salud Mental) pasarán a la Coordinación Central, específicamente a la Subsecretaría del Área de la Salud.

El Área de Atención Médica y Saneamiento Ambiental se encargó de la atención médica y el Saneamiento Ambiental:

----a nivel hospitalario

----a nivel de refugios

----a nivel de la comunidad.

Las acciones de Epidemiología Educación Sanitaria, Nutrición y - Salud Mental correspondiente a la Dirección General de Programas Normativos pasarán directamente a la Coordinación Central específicamente a la Subsecretaría de Salud, llevándose a cabo a:

---- Nivel de la comunidad

---- Nivel de refugios

---- Nivel hospitalario.-

5. Preparativos antes del ciclón.

- 5.1. Etapa mediata : En realidad, los preparativos se iniciaron desde mucho antes que se conociera la existencia del huracán "David". Consistieron en visitas realizadas por nosotros a las diferentes regiones de salud del país, inmediatamente regresamos del seminario de Santa Lucía, celebrado en Junio del año 1979. En esas visitas le dimos orientación a cada Director Regional de Salud sobre los diferentes tópicos tratados en el aludido seminario relativos a los preparativos para casos de desastres.

Aún cuando el huracán se presentó demasiado pronto después del seminario, creemos que estas instrucciones, junto a las que se le dieron en la etapa inmediata pre-ciclónica contribuyeron a una mejor preparación para hacerle frente a los problemas que surgieron.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

5.2. Etapa inmediata: Dos días antes del pasò del ciclón la Sub-Secretaría de Salud y la Dirección General de Atención Médica realizaron visitas a cada uno de los hospitales de la capital, entrevistándose con cada Director y su personal médico y para-médico.

La finalidad era asegurarse una atención médica adecuada a nivel hospitalario y de refugios y además organizar brigadas que pudieran movilizarse hacia áreas afectadas.

Las acciones tomadas fueron las siguientes:

- Dar de alta a todos aquellos pacientes cuya situación de salud lo permitiera a fin de tener suficiente camas vacías. Se llegó a obtener 700 camas vacías. (*esto en la capital*)
- Distribucion de personal, aumentando considerablemente el numero de médicos y personal para-médico en cada hospital.
- Suministrar medicinas de emergencia extra.
- Asegurarse la existencia de equipo y material mínimo para estos casos.
- Formación de brigadas médicas.

Además, para la atención médica a nivel de los refugios, se tomaron las siguientes acciones:

- Obtención de la lista de refugios suministrada por la Defensa Civil.
- Localización de la ubicación de cada refugio en el terreno.
- Asignación de personal médico a los refugios.
- Organización de paquetes de medicamentos básicos para cada refugio.

La Dirección General de Programas Normativos se reunió con los directores y personal de su dependencia para tratar los posibles puntos a seguir según las circunstancias.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

6. Principales regiones y áreas afectadas:

Las regiones más afectadas fueron la 0 en las áreas del Nucleo Central y San Cristobal; la Region I en las áreas de Peravia, Azua.

7. Principales problemas de salud provocados por el paso del huracán "David".

7.1. Mortalidad: SESPAS desconoce las cifras de muertes atribuible directamente al huracán, algunos sectores han considerado mas de 2000 muertes por traumatismos, ahogamientos y desaparecidos.

7.1.2. Mortalidad por Gastroenteritis:

La mortalidad por Gastroenteritis disminuyó considerablemente en los meses de Septiembre, Octubre, Noviembre y Diciembre del 1979, en comparación con los mismos meses de los 5 años anteriores. Ver cuadro siguiente:

Defunciones por Gastroenteritis 1974-1979
Sept, Oct, Nov, Dic. R.D.

Año	Sept.	Oct.	Nov.	Dic
1974	191	198	203	170
75	214	266	214	194
76	156	214	204	163
77	213	175	169	196
78	112	131	118	101
79	139	201	180	111

Fuente: División de Estadística SESPAS.

7.1.3. Mortalidad por Fiebre Tifoidea:

Las defunciones por fiebre tifoidea aumentaron ligeramente durante los tres ultimos meses de 1979, (en comparación con los mismos meses de los cinco años anteriores) disminuyendo en el mes de Diciembre. Ver siguiente cuadro

Defunciones por Fiebre Tifoidea 1974-1979
Sept, Oct, Nov, Dic. R.D.

Año	Sept.	Oct.	Nov.	Dic.
1974	1	4	1	2
75	3	0	3	2
76	2	1	2	2
77	6	1	2	4
78	3	4	1	1
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República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

7.1.4 MORTALIDAD POR SARAMPION.

Las defunciones por sarampión disminuyeron ligeramente en los últimos cuatro meses del 1979, en comparación a los cinco años anteriores.

Ver siguiente cuadro.

Defunciones por sarampión 1974-1979.

Sept., Oct., Nov., Dic., R. D.

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	9	12	13	15
75	19	16	18	16
76	24	28	20	19
77	17	14	11	11
78	6	4	3	8
79	9	17	18	15

FUENTE: División Estadística. SESPAS.

7.1.5 MORTALIDAD POR BRONQUITIS.

Las defunciones por Bronquitis, Bronco-neumonía, etc. disminuyeron notablemente en los últimos cuatro meses del 1979, en comparación con los mismos meses de los cinco años anteriores.

Defunciones por Bronquitis 1974-1979.

Sept., Oct., Nov., Dic.

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	35	39	46	36
75	39	42	33	36
76	35	43	25	20
77	36	41	23	37
78	32	23	29	24
79	28	35	34	29

7.1.6 MORTALIDAD POR DEFICIENCIAS NUTRICIONALES.

Las defunciones por avitaminosis y otras deficiencias nutricionales fueron ligeramente superiores en los meses de Sept., Oct., y Nov. de 1979, mientras que en Diciembre las defunciones fueron menores, comparado con los últimos cuatro meses de los cinco años anteriores al 1979.

Ver cuadro siguiente.

Defunciones por avitaminosis y otras deficiencias nutricionales 1974-1979, Sept., Oct., Nov., Dic. R.D.

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	44	45	58	61
75	55	54	81	88



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

AÑO	SEPT.	OCT.	NOV.	DIC.
1976	52	61	56	54
77	58	52	.61	49
78	67	41	42	34
79	73	84	84	50

FUENTE: División de Estadística. SESPAS.

Analizando los cuadros anteriores y en relación con las enfermedades de mayor incidencia podemos notar una disminución general de la mortalidad, significando ello una atención médica adecuada en una situación catastrófica - como la dejada en el país al paso del huracán "David" y luego la tormenta "Federico".
El tratamiento de la desnutrición se hace más difícil por su carácter menos agudo.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

de los cinco años anteriores al 1979. Ver cuadro siguiente.-

Defunciones por avitaminosis y otras deficiencias nutricionales les 1974-1979.-

SEPT. OCT. NOV. DIC., R. D.

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	44	45	58	61
1975	55	54	81	88
1976	52	61	56	54
1977	58	52	61	49
1978	67	41	42	34
1979	73	84	84	50

2/11/79

Fuente : DIVISION DE ESTADISTICA SESPAS.-

Analizando los cuadros anteriores y en relación con las enfermedades de mayor incidencia podemos notar una disminución general de la mortalidad, significando ello una atención médica adecuada en una situación catastrófica como la dejada en el país al paso del Huracán "David" y luego la tormenta "Federico".-

El tratamiento de la desnutrición se hace más difícil por su carácter menos agudo.-

7.2 Morbilidad : Como es lógico, se trataba principalmente de heridas y traumatizados.

Estas causas de mortalidad y morbilidad ocurrieron en período inmediato al Huracán principalmente a personas que no fueron a refugios confiables por no existir estos, por negligencia, ignorancia o confusión.

7.2.1 Morbilidad por Gastroenteritis. Ver siguiente cuadro.-

Aunque fué superior a los años anteriores en los meses de septiembre, Octubre y noviembre, los expectativos, dada la magnitud del desastre eran mucho más elevadas. En diciembre la incidencia fué ya normal.

Morbilidad por gastroenteritis 1974-1979.-
Septiembre, Octubre, Noviembre, Diciembre, R. D!-

M E S E S

AÑO	SEPT.	OCT.	NOV.	DIC.
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República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

1974	2083	4188	3083	2521
1975	5069	5360	2470	3036
1976	4746	4825	4279	4705
1977	6477	6232	6269	5324
1978	8989	8175	9918	7259
1979	11452	16690	10054	7105

Fuente : DIVISION DE ESTADISTICAS, SESPAS.-

7.2.2.- Morbilidad por Fiebre Tifoidea.-

Ver siguiente cuadro.-

Morbilidad por Fiebre Tifoidea.-

Septiembre, Octubre, Noviembre, Diciembre 1974-1979.-

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	30	79	36	10
1975	49	35	28	71
1976	153	116	87	83
1977	114	94	80	101
1978	61	78	68	30
1979	114	194	224	138

Fuente : DIVISION DE ESTADISTICAS, SESPAS.-

7.2.3 Morbilidad por sarampión.- Ver siguiente cuadro.-

Morbilidad por Sarampión.- 1974-1979.-

Septiembre, Octubre, Noviembre, Diciembre.-

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	253	257	239	254
1975	363	311	230	197
1976	874	580	420	428
1977	266	319	264	199
1978	393	376	477	355
1979	868	1309	1217	1022

Fuente : DIVISION DE ESTADISTICAS.- SESPAS.-

7.2.4 Morbilidad por Paludismo.-



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

El paludismo se incrementó en ~~pp~~ tres últimos meses, octubre, noviembre y diciembre, en comparación con los últimos cinco años.

Morbilidad por Paludismo.- 1974-1979.-
Septiembre, Octubre, Noviembre y Diciembre.-

AÑO	SEPT.	OCT.	NOV.	DIC.
1974	7	22	67	175
1975	2	6	6	20
1976	105	77	61	129
1977	7	31	93	147
1978	62	101	258	342
1979	104	346	627	509

Fuente : DIVISION DE ESTADISTICA.- SESPAS.-

Para fiebre Tifoidea y sarampión cuya morbilidad aumentó en los meses de Septiembre, Octubre y noviembre, declinando en diciembre, hacemos el mismo comentario que para gastroenteritis, en el sentido de que dada las condiciones ambientales completamente engativas, catastróficas, esperabamos una mucho mayor incidencia, considerando que las medidas de control tomadas fueron bastante efectivas. -

Problemas ambientales.-

Los principales fueron los siguientes:

- Falta de agua potable
- Instalación sanitarias colmatadas
- Letrinas desbordadas
- Acumulación de basuras
- Malos olores
- Aumento de la población de moscas, mosquitos, roedores
- Considerable número de vivienda destruidas y deterioradas
- Contaminación química por materias primas industriales esparcidas
- Alimentos perecederos descompuestos
- Alimentos no perecederos afectados.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

9.- Problemas nutricionales.-

La destrucción es una condición endémica del país que afecta principalmente a lactantes y pre-escolares la situación dejada por el Huracán David favoreció la agudización de la desnutrición, por falta o limitación de los alimentos en cantidad y la calidad .-

Entre los problemas que nos afectan podemos citar:

No se había programado la alimentación para los niños;

La cantidad de refugiados en la capital fué superior a la capacidad física de producción de raciones cocinadas por los comedores económicos;

En los refugios no había condiciones para preparar ningún tipo de alimentos para niños;

Inicialmente no se coordinó con la Dirección de Nutrición de Sespas ~~los comedores~~ ^{los comedores} para la alimentación infantil.-

10 : ~~problemas~~ ^{Problemas} de Salud mental:

Durante el Ciclón los principales problemas fueron de crisis - histericas a veces colectivas, así como estados de angustia y desesperación.

Después del paso del Huracán se presentó un síndrome de reacción al desastre observado en la población mayormente afectada. En este síndrome se notaba principalmente estado depresivo, con pérdidas de la esperanza. También tendencia a la apatía y a la pasividad.-

11.- Acciones después del paso del Huracán.-

11.1 Atención médica:

Se prestó atención médica a todos los lesionados, tanto a nivel de hospitales como en los refugios.

Como ya hemos señalado, a nivel de los hospitales se aumentó el personal médico general y especializado.

Para una mejor atención, se trasladaron a los hospitales de las áreas mas afectadas equipos de médicos especializados (ortopedistas, cirugía, pediatría, gineco, obstetricia, etc.) reforzando el personal médico ya existente, además se realizó -



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

un amplio suministro de medicinas a dichos hospitales.

Para la atención médica en las zonas rurales se organizaron brigadas médicas formadas por médicos residentes y de hospitales junto a estudiantes universitarios, principalmente de la UASD.-

Las zonas incomunicadas eran atendidas por brigadas similares trasladadas en helicópteros.

La atención médica a los refugios se realizó el mismo día del huracán por médicos asignados de los hospitales. Luego estos médicos se incorporaron a las brigadas móviles siendo sustituidos en los refugios por los médicos del Servicio Médico Escolar y estudiantes universitarios.

11.2 Epidemiología:

Las principales acciones estaban dirigidas a:

--Vigilancia epidemiológica

--Inmunizaciones

11.2.1 La vigilancia epidemiológica pretendía detectar y notificar a tiempo los casos de enfermedades transmisibles con fines de controlar ~~además~~ cualquier brote que pudiera presentarse.

Las principales enfermedades a tener en cuenta eran aquellas de fácil transmisión en un ambiente deteriorado. a saber:

Gastroenteritis

Fiebre tifoidea

Sarampión

Hepatitis

~~Orice (Etiología de la comunicación)~~

Tétano

Poliomielitis

otras



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

~~Además, los casos de defunción por la causa de resistencia de las personas a las enfermedades concurridas.~~

Para establecer el sistema de vigilancia epidemiológica se dieron instrucciones a todo el personal de salud para que se notificaran al nivel superior inmediato y se tomaran las medidas de lugar: tratamiento, hospitalización, aislamiento, investigación epidemiológica, saneamiento ambiental, inmunizaciones, etc., según el caso.

También se le dieron instrucciones para notificar casos sospechosos de las enfermedades antes mencionadas a numerosos grupos de voluntarios que se sumaron al personal de salud para colaborar en las acciones.

11.2!2 INMUNIZACIONES :

Aprovechando la enorme cantidad de voluntarios disponibles, se reforzaron los programas regulares de inmunización e incluir la vacunación TAB (Contra la fiebre tifoidea y paratifoidea): *selectiva*.

La vacunación antisarampionosa se aplicó principalmente a los grupos de población infantil ~~vacunados~~ *vacunados* sobre todo en los refugios.

Las otras vacunas aplicadas fueron DPT (Contra difteria, tétanos y tosferina), TT (Contra tétanos) y antipoliomielítica.

En total se aplicaron en los meses de septiembre, octubre noviembre y diciembre del 1979 los siguientes números de dosis:

TAB :	675.500	TT :	525.297
DPT :	353.105	SARAMPION :	64.175
POLIO:	812.375		

Es importante destacar la organización que se tuvo en esta vacunación.

El Distrito Nacional fué zonificado según el número de médicos Epidemiólogos existentes y tomando en cuenta el área de influencia de cada hospital donde están asignados los médicos epidemiólogos.

Las universidades, principalmente la UASD, y las diferentes organizaciones de servicio y clubes barriales proporcionaban los voluntarios vacunadores. Estos vacunadores eran asignados a los



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

médicos epidemiólogos en número proporcional al tamaño de su correspondiente zona de influencia.

Las vacunaciones se hacían visitando casa por casa y en puestos fijos localizados en los hospitales y otras unidades de salud.

Los médicos escolares asignados a los refugios se encargaban de hacer las vacunaciones respectivas en los refugios..

A las áreas afectadas se enviaron médicos Epidemiólogos y grupos de voluntarios para la vacunación.

Los voluntarios ^{vacunadores} ~~vacunados~~ eran debidamente adiestrados en todos los aspectos relacionados con las vacunas y la vacunación.

11.3 SANAMIENTO AMBIENTAL:

--Las acciones fueron dirigidas a:

11.3.1 --Control de la calidad del agua de consumo humano para lo cual se hizo tratamiento a base de hipoclorito de calcio al 70% (cloro granular H.T.H.) y según normas internacionales, a toda el agua de consumo humano distribuida por SESPAS y CAASD; en coordinación con CAASD se distribuyó el agua demandada por los hospitales y refugios, utilizando camiones cisternas; se hicieron pruebas para la elección de fuentes de agua; se inspeccionaron las fábricas de hielo; se distribuyeron afiches "Hierva el agua" y se dió labor de orientación a los clubes del Distrito sobre tratamiento del agua y desinfección de cisternas, se mantuvo el control a las industrias procesadoras de agua de consumo humano.

11.3.2 - Disposición de excretas y aguas servidas.-

Distribuyendo letrinas de tanque para uso de emergencia diseñadas por SESPAS y dando la asesoría técnica para tales fines; supervisión de los refugios para constatar el funcionamiento de los sanitarios y darles instrucciones adecuadas.-

11.3.3 - Control de desechos sólidos, distribuyendo tanques para utilizarlos como zafacones y coordinando con los Aunjamientos para la recolección de los desechos en las áreas más críticas.

11.3.4 - Control de insectos ^{vectores} ~~vetones~~, coordinando con Sanidad Militar para cegamiento de charcos y extracción de aguas estancadas.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

cadras y fumigaciones de áreas con alto índice de moscas, coordinando con SNEM (Servicio Nacional de Erradicación de la Malaria).

11.3.5 - Control Sanitario de hoteles, ^{confusión de} ~~clasificación~~ en cisternas y piscinas, disposición de basuras putrescibles, etc.

11.3.6 - Control de alimentos, inspeccionado las principales - industrias procesadoras, almacenadoras y distribuidoras, descomisando todos los alimentos en mal estado, enterrando la enorme cantidad de pollos muertos de las granjas.

11.4 NUTRICION :

Las principales acciones tomadas fueron las siguientes:

- Obtención urgente de leche líquida lista para ser usada en niños menores de un año a diferentes casas distribuidoras.
- Elaboración de un listado de necesidades nutricionales para niños damnificados.-
- Formación de un comité de emergencia formado por técnicos - nutricionistas de ONAPLAN, CARITAS DOMINICANA, UPAN, AGRICULTURA y SESPAS.-
- Entrega del listado a la Defensa Civil para obtener las donaciones de los alimentos.-
- Distribución en los refugios de parte de la leche que SESPAS proporciona gratuitamente en los barrios marginados.-
- Obtención de leche, en polvo en distintas casas distribuidoras y también de otras instituciones donantes.
- Obtención de alimentos especiales (proteínas, etc.) y distribuido en los refugios y en los Centros de Recuperación Nutricional.-
- Traslado de dietistas de los hospitales a los refugios para supervisar la conservación adecuada de los alimentos, enseñar a preparar adecuadamente los alimentos, controlar la distribución según grupos de edades, hacer un listado diario del número de raciones necesarios de cada alimento por personas y por día, entregar el listado para la solicitud ~~y cantidad~~ de los alimentos, rendir un informe diario.-



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

---Obtención de vehículos para la distribución de los alimentos.

---Mantener una coordinación con las otras instituciones encargadas de proporcionar alimentos.--

11.5 - SALUD MENTAL :

Se ayudó a la comunidad a orientarse - después del desastre, desarrollándose actividades que iban - desde la atención psicológica individual hasta la organización y coordinación de grupos de refugios, actuándose como motivadores de toma de decisiones y como consientizadores en lo referente a la apatía y desorganización grupal.

El trabajo principal se llevó a cabo en Villa Ocra para ser esta comunidad una de las más afectadas al sufrir cuantiosas pérdidas de vidas humanas.

Un equipo de emergencia compuesto por psicólogos y psiquiatras se trasladó a ese lugar para dar orientación a dicha comunidad. Posteriormente se creó un Centro de Salud Mental ~~Comunitario~~. -
Comunitario

En las diferentes localidades donde existen Centros de Salud Mental el Personal participó como orientadores psicológicos de la población y en la formación de grupos organizados para las diferentes acciones en los refugios y en las localidades.

11.6 - EDUCACION SANITARIA :

En la etapa pre-Ciclón Los Educadores para la Salud a Nivel Nacional se unieron a la Defensa Civil exhortando a la ciudadanía a buscar lugar seguro en los refugios previamente establecidos por el organismo competente.

Después del paso del huracán los Educadores para la Salud hicieron recomendaciones a la población tendientes a prevenir enfermedades que suelen presentarse a consecuencia de fenómenos de esta naturaleza.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

Se dispuso el reforzamiento de las áreas más afectadas, enviándose Educadores de otras localidades, participando además en la organización de grupos de trabajo en dichas localidades. En todas los niveles se desarrollaron acciones dirigidas a concientizar la población sobre una serie de medidas que debían tomarse para reducir la posibilidad de brotes epidémicos.

Entre esas medidas se hicieron recomendaciones sobre:

- Hervido del agua
- disposición de excretos
- Disposición de basuras
- Higiene personal
- Higiene de los alimentos
- Higiene de la vivienda en general
- Vacunación para prevenir enfermedades

Se confeccionaron miles de afiches relacionados con los temas citados.

Se dieron charlas a diferentes organizaciones comunitarias sobre la prevención de enfermedades.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

12. ASISTENCIA SOCIAL Y EL HURACAN DAVID

La programación de emergencia de Asistencia Social en los días del Huracán David comenzó inmediatamente este pasó por el Distrito Nacional.

Se le dió prioridad a la ciudad de Santo Domingo y a la parte-sur de la Provincia de San Cristóbal.-

El Primer día se llevó a cabo una evaluación y concentración de recursos, tanto humanos como materiales. (Trabajadores Sociales, Asistentes Sociales, inspectores, encargados puestos de leche, estadígrafos, vehículos oficiales y privados) se creó una oficina de coordinación y control que se dotó de una estructura estadística, una de almacenaje (alimento y ropas), transporte y supervisión.

Concomitantemente con estas acciones se elaboró una zonificación del Distrito Nacional donde se procedió, con la ayuda de un mapa y un listado de los refugios oficiales de la defensa civil a ubicar los refugios existentes en ese momento.

Se dividió todo el personal en las 13 zonas del Distrito Nacional y se comenzó a verificar sobre el terreno y con ayuda de un cuestionario que se elaboró rápidamente, la situación de los damnificados, su ubicación (ya que el listado de los refugios oficiales no correspondía con los refugios habilitados), el número de refugiados, la edad de estos, situación de salud, vacunación, pérdidas materiales sufridas, materiales de hogar rescatado, etc.

Debido a la cantidad de pequeños refugios que se encontraron dispersos en el Distrito Nacional y debido a la dificultad que representaba la adecuación de todas estas personas en el área de la salud, saneamiento, alimentación, etc. se procedió de común acuerdo con la defensa Civil a concentrar los refugiados en locales más amplios y con una planta física adecuada (donde el Ciclón no hubiere hecho estrago), agua potable y preferiblemente luz.-

La responsabilidad de la estrategia de reubicación de los macro refugios recayó en la Oficina de Proyectos y Evaluaciones de la Sub-Secretaría de Asistencia Social, debido a que era la única institución que tenía ubicado los refugios de toda la ciudad capital.

Se procedió luego a organizar administrativamente cada macro refugio con un trabajador Social Profesional a la Cabeza y con el auxilio de varios asistentes sociales, los cuales a su vez tenían la responsabilidad de organizar, coordinar y supervisar los



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

comités internos que se iban a encargar de las diferentes actividades de cada refugio.

A nivel central se formaron dos equipos de aprovisionamiento, - uno de alimentos y el otro de ropas cuya principal función era - captar los alimentos requeridos ya sea por compra ó por donación y pasado a los almacenes desde donde eran requeridos para el reparto en los refugios. Estos almacenes dependían directamente de la Oficina de Proyectos y Evaluaciones, la cual procesaba los datos estadísticos que sirvieron para el operativo.

La parte de nutrición infantil (niños menores de 3 años) fué su- plida por el programa complementario de Asistencia Social quién inmediatamente tenía los datos de los niños menores de tres años de cada refugio, coordinaba con una pasteurizada la entrega de - la cantidad de leche requerida, llegandose a repartir diariamen- te unos 10,000 cuartillos de leche (946 C. C.) entre los damnifi- cados.

La parte que tenía que ver con ropa se hizo de unos 15,000 pares de zapatos y tennis de todos los tamaños (la mayoría adquiridos por compra), de unas 10,000 frazadas y unos 1300 colchones peque- ños, además de la donación de la ropa usada.

La parte alimenticia fué coordinada primeramente con la Defensa Civil, pero debido a la falta de apoyo de equipo adecuado de -- transporte, tuvimos que dejar de atender este renglón y solo nos quedamos con el suministro ocasional de leche en polvo, leche - condensada, chocolate, fósforos, aceite y unos que otros embuti- dos; aunque desde dentro de los propios refugios los Trabajado-- res Sociales quedaron en libertad de coordinar la alimentación - de los refugiados con instituciones tales como CARE, CARITAS, F. A., CONANI, etc.

Los recursos humanos fueron 24 trabajadores Sociales, 68 Asis-- tentes Sociales, 2 Estadígrafos y 3 Ayudantes, 7 Secretarias, 2 Encargados de Almacén con 3 Ayudantes cada uno, 2 Supervisores de terreno y un coordinador general.

El apoyo logístico estuvo constituido por 3 vehículos permanen- tes, lo cual constituyó un obstáculo muy serio para todo el ope- rativo.



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

13. AYUDA INTERNACIONAL--

La presidencia de la República estableció la oficina coordinadora de Ayuda Internacional OCAI, presidida por la Secretaría de Estado de Relaciones Exteriores y formando parte la Secretaría de Estado de Salud Pública y Asistencia Social, el Instituto Dominicano de Seguros Sociales, la Cruz Roja, la Secretaría de Estado de Obras Públicas, la Oficina Panamericana de la Salud, la ONU, UNDR0, el Consejo de Ayuda Exterior, designado por la Presidencia.

Cada Sector llévó un listado de las necesidades post-huracán.-

SESPAS llévó un listado de Medicamentos y equipos.

14.- Ayuda Internacional recibida por SESPAS.-

Recursos humanos : Médicos norteamericanos,
Puertorriqueños y franceses.-

Medicinas : enviadas por AID consistente, principalmente
sueros, antibióticos yeso anticépticos.

AYUDA DE HAITI EN MEDICINAS.-

Ayuda de la Sociedad Médica de Houston, Texas, consistente en -
medicinas, ropas, equipos médicos.-

Ayuda de médicos dominicanos residentes en Puerto Rico,consisten
te en medicamentos.-

Hospitales de Campaña (4) donados por la Fundación Panamericana
de Desarrollo.-

Planta Eléctrica donada por la Fundación Dominicana de Desarrollo.-



República Dominicana

SECRETARIA DE ESTADO DE SALUD PUBLICA Y ASISTENCIA SOCIAL

Equipo quirurgico, donado por Japón.-

;

Ayuda en diferentes áreas de la OPS.-

15.- Mecanismos de Solicitud: Todo a travez de la Cancillería.-

16.- Problemas de recibimiento:

~~Facilitada~~ ~~SESPAS~~. Los medicinas utilizadas en el período crítico fueron comprados localmente por SESPAS.-

17.- Problemas de almacenaje : No hubo .-

18.- Problemas de distribución : Sev vió afectada por la limitación y dependencia de los medios de transporte, principalmente aereo.-

19.- Comunicaciones : A travez de la radio de la Secretaría de Agricultura que facilitó un transmisor.-



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

CONCLUSIONES GENERALES.

- 20.1 En los meses de Agosto y Septiembre de 1979 la República Dominicana fué azotada por el huracán "David" y la tormenta "Federico" ocasionando una situación de desastre nacional, pero principalmente en parte de la región sur.
- 20.2 Los grandes logros obtenidos en salud comparados con lo que se esperaba de acuerdo a la magnitud y naturaleza del desastre fueron posibles en función de:
 - 20.2.1 Medidas de organización previas al desastre.
 - 20.2.2 Adecuación de la estructura orgánica de SESPAS para responder agilmente a las necesidades de salud de la población.
 - 20.2.3 Coordinación y racionalización interna de actividades y programas en base a prioridades.
 - 20.2.4 Coordinación inter-institucional atendiendo a las instrucciones definidas por el Gobierno Nacional.
 - 20.2.5 Racionalización de la ayuda internacional recibida.
 - 20.2.6 Racionalización de los recursos humanos, técnicos y económicos de SESPAS y de los aportados por otras instituciones y grupos voluntarios.
 - 20.2.7 Participación masiva, pero organizada de la Comunidad, especialmente Comités de Salud, Clubes Culturales, de servicios, etc.
 - 20.2.8 Coordinación con las Universidades en lo que respecta al área de las Ciencias de la Salud.

21 RECOMENDACIONES.

- 21.1 Los preparativos para casos de desastres deben ser un proceso permanente no improvisado.

Incluirán:

- Formación de recursos humanos a nivel técnico profesional para especializarlos en estos acontecimientos, en número suficiente.
- Educación a la Comunidad en programas orientados hacia tales fines.
- Dar cursos específicos de primeros auxilios a los grupos organizados de la Comunidad (Comités de Salud, Clubes Culturales, Sindicatos etc, etc.)



República Dominicana

Secretaría de Estado de Salud Pública y Asistencia Social

- Adiestrar a todo el personal en el área de la salud a nivel nacional en Cursos para casos de emergencias.
 - Inventariar los recursos técnicos y físicos que puedan utilizarse en casos de desastres.
 - Mantener un stock mínimo de medicamentos, alimentos y otros materiales que puedan ser utilizados inmediatamente en casos de desastres.
- 21.2 Todas las acciones de salud inmediatamente antes, durante y después del período de desastre deben ser dirigidas y/o coordinadas por la SESPAS para garantizar una mayor racionalización y eficacia.
- 21.3 Toda ayuda internacional en el período de desastre debería estar supeditada a las solicitudes de los organismos locales correspondientes facultados oficialmente para ello.
- 21.4 Incrementar el intercambio de experiencias y conocimientos técnicos entre los países del Caribe.
- 21.5 Solicitar acuerdos a los Gobiernos del Área que permitan proporcionar cooperación técnica y material a cualquiera de los pueblos en casos de desastres.

VIII. First Aid Training
Summary Statement and Comments

This regional project proposes the training of trainers in basic first aid and the provision of teaching aids to facilitate the multiplier effect. Bilateral, regional and international financing would be required in support of projects undertaken in participating countries. The League of Red Cross Societies has indicated an interest in providing the necessary expertise to carry out the training effort and has suggested its regional office could stimulate public interest and awareness in first aid training.

Dalton

Caribbean Disaster Preparedness Project Conference
Project Proposal

Program Area - First Aid Training Chairman - Rene Carrillo

I. Title - Regional First Aid Training Program

II. Description of need or problem:

From papers presented and as a result of discussions during the Caribbean Disaster Preparedness Project Conference, it is clearly understood that disaster oriented First Aid training of the general public is a major element of disaster preparedness activities.

Recognizing that in any kind of natural disaster the most crucial period for the casualty ranges from the moment he becomes injured until the time qualified aid can be made available.

Anticipating that the functioning of the usual medical facilities and services will be severely disturbed by the effects of the disaster, the casualty's well-being will depend on the quality of aid which can be provided by the people in the immediate environment.

Recognizing that the efficiency of First Aid is directly related to the number of people trained, the quality of their training and their readiness to apply their skills when needed, it becomes indispensable that a great number of people be given high quality training.

III. Description of project and objectives:

Recognizing that most of the courses presently taught in the Caribbean Region are too comprehensive and too time consuming to meet those requirements, it is considered necessary to:

- develop a regional concept for the teaching of basic First Aid;
- establish appropriate means for the execution of this program;
- develop teaching aids and information material;
- train instructors; and
- make provisions for efficiency-evaluation of the program.

This program has to be suitable for the effective training of great numbers of people living in disaster prone areas and should, therefore, be:

- effective - limiting its content to mainly life-saving measures and techniques
- easy to learn concentrating on demonstrations and practical exercises rather than on theoretical lectures
- short to facilitate widespread dissemination and to maintain expenses

IV. Action to be taken to enhance this project:

1. Organize a regional workshop to develop a curriculum and to establish technical and administrative procedures for its implementation.

Participants should be selected to guarantee their expertise and should preferably be educators, medical and para-medical personnel, government representatives and First Aid specialists for PAHO, St. Johns and Red Cross.

2. Present proposals formulated by this workshop to governments and organizations concerned with the implementation.
3. Conduct of at least two training courses for national "chief instructors" who, in turn, will be responsible for the training of a sufficient number of instructors and for the organization and supervision of their respective duties.

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

None of the countries in the region has adequate financial and technical resources to create the preconditions for the achievement of the objectives mentioned under III.

VI. External financial/technical assistance:

One man-year over a period of three calendar years	US\$ 70,000
Seminar (30 participants x 6 days excluding airfare)	20,000
Two training courses for "Chief instructors"	30,000
Teaching and information material	<u>80,000</u>
TOTAL	200,000

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

It is recommended to enhance the responsibility the League of Red Cross Societies. The reasons being that:

- relevant resources available within the organization could be made available,
- the League's Regional Office could assist,
- the League is planning to have a special delegate for disaster

IX. Voluntary Agencies Summary Statement and Comments

This project, designed to make fuller use of the resources and expertise of voluntary agencies with programs in the Caribbean, is a proposal for the creation of a Caribbean Disaster Unit that would establish a system to coordinate activities of voluntary agencies. In suggesting management of the project by UNDRO or CARICOM, the proposal does not take into account the English-speaking or Eastern Caribbean focus of both organizations' activities. It is assumed that the voluntary agency coordination proposed in the project was not meant to be limited to a subregional area.

The project did not convey an element discussed at the Disaster Preparedness Seminar in St. Lucia in June 1979, i.e., guidelines for governments to promote utilization of the resources of indigenous and international voluntary agencies in time of disaster. Perhaps consideration might still be given to such a possibility as a second project in the voluntary agency category.

Dalton

Caribbean Disaster Preparedness Projects Conference
Project Proposal

IX-R-1

Program Area - Voluntary Agencies

Chairman - Leon O. Marion

I. Title - Caribbean Disaster Unit

II. Description of need or problem:

- A. Coordination: Past disasters in the Caribbean and especially immediate post-disaster relief and rehabilitation programs indicate a need of greater coordination of information, gift-in-kind shipments, and the general flow of relief material in order to increase the effectiveness of voluntary agencies during times of disaster.
- B. Authority: There is a need to identify the individual or office which exercises the necessary authority during a disaster.
- C. Preparedness Plans: There is a need for up-to-date information concerning preparedness plans for each country.
- D. Roster of Key Disaster Personnel: The fluctuation of personnel both within governments and voluntary agencies requires updating of personnel listings for voluntary agency utilization.
- E. Adequate Assessment Information: To be capable of making effective program decisions necessitates having access to fast, reliable assessment information.
- F. Entry Documentation: To move with as much dispatch as possible in providing disaster relief requires the standardization of entry document procedures for voluntary agency personnel.
- G. Transport: To move material and personnel requires the availability of air, ground and water transport to increase the effectiveness of voluntary agencies.

III. Description of project and objectives:

A Caribbean Disaster Unit would include a voluntary agency section which would have objectives as follows:

- A. Coordinate activities of voluntary agencies.
- B. Clarify with national/island governments areas of cooperation.
- C. Sections would work with national/island governments and voluntary agencies in-country to perfect the level of disaster preparedness in the following areas:
 1. Transport - materials, equipment, food commodities which require heavy trucks, perhaps helicopters, and boats. Travel for assessment teams and field workers.
 2. Fuel - emergency vehicles to be used for transport.
 3. First aid and medical care - training programs.
 4. Food commodities - determining need and expediting shipment.
 5. Personnel - assessment teams, management personnel and field personnel.
 6. Materials and equipment: to assure accessibility of wood, cement, nails, zinc, seeds, tractors, insecticides, electrical equipment, portable water equipment.

- 7. Establishment of National Disaster Authority, where necessary.
- 8. National/island recognition of Caribbean Disaster Unit.
- D. In post-disaster situations to assist the national government with an assessment of extent of damage and extent of needs.
- E. In post-disaster situations to provide expertise to national/island government officials in the area of disaster relief management.
- F. Establishment of a unit responsible for carrying out objectives of preparedness. Unit members responsible for level of disaster preparedness in country. In post-disaster situation unit available to provide needed expertise.

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

- A. Sharing of cost by participating governments/islands.
- B. National/island preparedness plan should be kept up-to-date, by review, to enhance coordination and reaction to meeting needs.
- C. Local personnel should be trained in disaster preparedness and response activities.
- D. Advance recognition and approval of participating agencies will enhance immediate response.
- E. Assessment of national/island capabilities will enhance establishing needs related to material, personnel and logistical assistance.
- F. Establishing national entity to coordinate locally would be key to coordination.
- G. Establishment of common objectives, terminology and communication will enhance coordination.

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

- A. UNDR0 has mandate for assisting with national disaster preparedness programs.
- B. CARICOM has interests in the field of disaster preparedness.
- C. U.S. Government, through OFDA, becomes involved in every Caribbean disaster upon a necessary declaration by the Ambassador.
- D. Disruption of development assistance programming by disaster requires necessary preparedness programs to mitigate loss of life, property, funds, and projects.

VI. External financial/technical assistance:

Will be needed but cannot make determination at this time to any precise degree. Estimated personnel costs - 5 professional and 3 support staff, rent, telephone and telegraph, and travel.

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

UNDR0 - CARICOM in conjunction with the American Council of Voluntary Agencies for Foreign Service.

Drafted by: Voluntary Agency Committee

X. Regional Activities
Summary Statement and Comments

One project entitled "Uniform Building Code (for the Commonwealth Caribbean) - Disaster Mitigation" was submitted in this category.

The project proposes editing and revising existing codes, preparing missing sections of the code and printing and distributing the final code document or documents. The questions of the interest of the non-Commonwealth Caribbean in such a program and the applicability of the building code proposed (perhaps with appropriate modifications) for use in the non-Commonwealth Caribbean countries should be addressed.

In reacting to this proposal countries of the non-Commonwealth Caribbean are requested to indicate whether they have such a code in force. Such material might be of use in the formulation of the proposed Commonwealth Caribbean code.

Dalton

X-R-1

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Regional Activities

Chairman - Raymond Noel

I. Title - Uniform Building Code (for the Commonwealth Caribbean) - disaster mitigation

II. Description of need or problem:

With the exception of the Bahamas no commonwealth Caribbean country has a building code and no minimum standards of safety or amenity are required for any building. Practices differ from country to country, from organization to organization (within the same country) and from person to person (within the same organization). Many of these practices are ill-informed and substandard, leading to persons and properties being exposed to unnecessary risks. Other ill-informed practices lead to unnecessarily high construction costs.

There is an urgent and long-standing need for a code to rationalize design and construction practices in the region.

Much work in this regard has been done voluntarily by CCEO members during the past 11 years, but the remaining task is beyond the means of the Council of Caribbean Engineering Organizations.

III. Description of project and objectives:

- A. Editing and revising existing CCEO codes on earthquake-resistant structures, wind loads, gravity loads, load-bearing masonry, structural timber, plumbing and electrical works.
- B. Preparing the missing sections of the code.
- C. Printing and distributing the final code document or documents.

A and B will be carried out in full, continuous consultation with professional and government bodies. Two regional meetings will be held as part of this exercise.

The project is estimated to take 2 years and is aimed at bringing some order to the construction industry, to protect lives and property and thus to mitigate future potential disasters.

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

The professional groups and the territorial governments should provide liaison and advisory personnel on an ad hoc basis. Such personnel would initially provide the full-time project coordinator with information on the state of the art in various territories and they would subsequently review and discuss interim drafts of the code or sections thereof.

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

The project should be of vital interest to international lending (and donor) agencies who fund capital works projects in the Commonwealth Caribbean as a means of protecting their investments.

Many (or most) of the construction problems are similar in all of the Commonwealth Caribbean territories. A uniform regional code is therefore appropriate and desirable (rather than individual national codes).

VI. External financial assistance:

Funds as follows:

Project management (24 man-months)	- US\$ 100,000
Secretarial services, office accommodation, equipment, supplies, telecommunications and travel	- 60,000
Short-term consultants	- 30,000
Regional meetings	- 40,000
Publishing	- 30,000
Contingencies	- 20,000
Total (1980 dollars)	- 280,000

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

CARICOM (in close cooperation and continuous consultation with the Council of Caribbean Engineering Organizations)

Drafted by: Tony Gibbs

XI. Special Country Projects Summary Statement and Comments

This category was established to provide for the submission of individual country projects which would not fit under other areas of preparedness activity. Among projects submitted are two on flood warning, three on emergency support supplies and equipment and four on emergency shelter and emergency pure water supply. Because most of the countries of the Caribbean are prone to floods, flood warning systems and special preparedness for floods are properly highlighted in this disaster pre-planning project. The present state of hydrological knowledge and available technical equipment should encourage threatened countries to consider hydrological and flood warning activities.

The project, "Establishment of a Real Time Flood Warning System for Belize", might be used as a model for other country projects. While it does not provide hydrological data, the flood warning system prepared for Jamaica clearly cites a need for such action.

Project submissions for the Cayman Islands, Montserrat, and St. Lucia describe the need for emergency supplies and equipment. Water supply is listed as essential in projects from Turks and Caicos Islands, Montserrat and St. Lucia. Montserrat, St. Lucia and Cayman Islands projects describe needed search and rescue equipment and medical/health supplies. Emergency shelters and shelter services are identified by several government representatives as being important to preparedness.

These and several other projects require technical assistance to describe the need in more detail and to develop specifications and cost estimates. External financing is required.

Dalton

I. Title - Establishment of a Real Time Flood Warning System for Belize

II. Description of need or problem:

Two types of natural disasters plague Belize in regular recurring cycles: a) tropical storms and hurricanes with associated flooding during the months of June to November each year; b) temporals or northers also affect Belize during the early winter months, causing heavy rainfall and severe flooding.

Statistics show that within the past 50 years, 27 tropical storms and hurricanes caused considerable flood damage to Belize. The disastrous floods of November/December 1979 were the result of a severe norther.

Since Belize's economy is based on agriculture productivity, it is obvious that it will suffer many setbacks on an almost annual basis due to these occasions of severe flood damage.

Minimizing flood damage would therefore prove a significant economic benefit for Belize. This can be done in two ways: a) through the provision of timely flood warnings which will allow preventive and precautionary measures to be taken for safeguarding crops, livestock, and other property; b) by providing long term flood frequency analyses for the planning of flood control, and water conservancy programs.

III. Description of project and objectives:

This project seeks to provide a service for forecasting flood events on a timely basis for the purpose of taking preventative measures. Activities of a flood forecasting service will also provide flood frequency analysis for future design of flood control structures, etc., and other long term planning of water conservancy programs.

Its objectives are: to implement an appropriate hydrological data collection network in the river basin of Belize; to set up a communication system for the collection of real time hydrometeorological data; and to train personnel in the collection and analysis of hydrometeorological data as well as in flood forecasting techniques and procedures. The data network will include instrumentation for continuous recording of the following hydrological variables: rainfall amount and intensity, river stage and stream flow.

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

The Belize Government will provide the personnel and other works necessary to install and maintain the new equipment. The processing of collected data will also be the responsibility of the Belize Government. No technical advisors are requested. Appendix (2) gives a breakdown of the project funding.

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

This project does not relate to activities elsewhere in the Caribbean, but may provide a model for flood warning systems in other Caribbean countries.

VI. External financial assistance requirements:

External assistance will be in the form of equipment, such as field instruments and a vehicle, and training of personnel. Costing is detailed in appendix (2).

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

The National Hydrometeorological Service will have primary responsibility for project design, management, and for contact with donor organizations through the Ministry of Energy and Communications.

Instrumentation

<u>River Basin</u>	<u>Area (mi)</u>	<u>Recording Rain Gauges</u> Max	<u>Stage Recorders</u>	<u>Crest Stage Gauges</u>	<u>Pendulum Vane Rec</u>
Belize	1700	8	5	3	5
Sibun	471	2	2	1	2
N. Stann Cr.	118	1	1	1	1
Sittee	185	1	2	1	1
S. Stann Cr.	110	1	1	1	1
Monkey R.	460	2	3	1	1
Deep	186	1	2	1	1
Golden Str.	55	1	1	1	1
Rio Grande	320	2	2	1	
Moho	329	2	2	1	
Temash	133	1	2	1	
		<u>22</u>	<u>23</u>	<u>13</u>	<u>13</u>

Project Funding:

1. Local Contributions:
 - a) Personnel salaries for 2 forecasters and 6 technical officers
 - b) Data processing computer tapes/time
 - c) Field instruments 23 Rivergauges
2. External Contributions:
 - a) Equipment (hydrometeorological)
 - 22 Recording Raingauges
 - 23 Stage Recorders
 - 13 Crest Stage Gauges
 - 13 Pendulum Vanes
 - b) Transportation:
 - 1 Vehicle
 - c) Data Collection System
 - DARDC
 - d) Training
 - 2 Forecasters
 - 2 Hydrology Technicians

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Special Country Projects

Chairman - James Lockard

I. Title - Cayman Islands - Provision of Disaster Emergency Support Supplies

II. Description of need or problem:

There is a need for medical and disaster emergency support supplies to mitigate the immediate impact effects of disaster in the Cayman Islands.

Experience in previous natural disasters has shown that island communities are often subjected to several days delay in the arrival of relief personnel and supplies from overseas. During this period there may be loss of life and great hardship to survivors because emergency equipment and supplies are not available. In addition, it is important that following a major disaster the morale of the affected population should be maintained; this is difficult if tools and supplies are not available to enable the people to begin rescue and clearance operations. It is also good psychologically for local people to be seen in action when the first outside help arrives.

III. Description of project and objectives:

The Government of the Cayman Islands, recognizing that there are certain basic indispensable requirements necessary for the implementation of a viable disaster preparedness program, advocates a project for the acquisition of a limited amount of emergency and disaster impact mitigation supplies as one of these requirements. Whilst it is conceded that this project has as its main objective the on the spot availability of these materials in the event of need, these supplies would also be held in readiness to be dispatched to other areas of the region should their disaster needs so require.

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

Government would undertake to provide appropriately protected facilities for the storage of the supplies.

In the case of drugs, government would undertake to maintain the updated currency of such stock as well as ensuring that these supplies and equipment are adequately safeguarded and maintained.

Government will also assume responsibility for local costs incidental to the handling, transporting, and shipping of any of these supplies should this be required.

VI. External financial/technical assistance:

Due to acute budgetary limitations caused by the demands placed on the government's resources because of social, economic, and other needs related to developing countries, this government is constrained to request the financial assistance necessary for the implementation of this project.

It is of primary concern for our peace of mind and well being in addition to the improvement of our degree of self-sufficiency during the immediate period following a disaster.

Accordingly we wish to request your special consideration and hopefully your kind approval of such a necessary project.

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

Management of this project will be the direct responsibility of our Public Health and Medical Department Medical Officer who has liaison with the heads of other departments involved with the implementation of this program.

Contact with donor organizations will be established through the Honorable Chief Secretary of the Cayman Islands.

Drafted by: Dennis Foster

XI-C-3

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - Special Regional Project - Survey of Hurricane Shelters

II. Description of need or problem:

Recent experience in Dominica and elsewhere has indicated that many buildings, such as schools and churches, which have been designated as hurricane shelters are not safe in extreme conditions.

III. Description of project and objectives:

Grave danger exists in the utilization of structurally unsuitable buildings as hurricane shelters, hence the objective of the project is to encourage governments to carry out a survey of their hurricane shelter programs wherever appropriate, and to provide technical advice when required.

The project allows for alerting governments of dangers which exist and offering engineering survey assistance. Subsequently, a consultant engineer would be appointed.

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

Countries would be expected to update the list of hurricane shelters, taking into account structural suitability designated buildings under the project engineering advice would be made available.

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

Developing countries in the region which do not have the necessary engineering expertise would otherwise not be able to afford the cost of a visiting consultant.

VI. External financial/technical assistance:

Expert Services - 12 man months.

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

UNDRO

Drafted by: Ave Brewster

Caribbean Disaster Preparedness Projects Conference
Project Proposal

XI-C-4

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - Government of Guyana - Disaster Emergency Shelter

II. Description of need or problem:

A need exists in the urban area of Guyana for a substantial emergency shelter to cater to people whose homes have been lost following a disaster. High density housing areas in Georgetown are particularly prone to hazard by fire. When a fire occurs in windy conditions it spreads very rapidly and many homes are affected by the conflagration. The authorities are geared to deal with an event but not for dealing with the aftermath and subsequent misery caused to a large number of homeless people.

III. Description of project and objectives:

The objective is to provide accommodation for up to 150 people who may have lost their homes and belongings by fire, or indeed any other disaster.

The purpose is to house such people for a limited period in a community shelter.

To this end it is proposed to erect a building allowing 40 sq. ft. per person including toilet, bath, and dining facilities. This would give an overall floor area of 6,000 sq. ft. It is recognized that such a building would be only in full or part use as an emergency shelter from time to time. It is therefore proposed that the living area should be equipped with removable partitions to enable mobilization for other community purposes. The building would be at all times recognized for its primary function, namely, as an emergency shelter.

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

Government would provide land for the purpose and would on completion undertake supervision and maintenance of units.

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

The government of Guyana is not in a position at this time to provide funds to meet this need. Nevertheless, it is submitted that this project falls within the description of disaster preparedness and indeed would be more readily used than, for instance, a hurricane shelter.

VI. External financial/technical assistance:

It is anticipated that the cost of constructing a building of this nature would be in the vicinity of US\$ 250,000.

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

The implementing Ministry would be the Ministry of Health and construction by the Ministry of Works.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

XI-C-5

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - Improvement of Flood Warning Systems in Jamaica

II. Background and Justification:

Intense rainfall in the steep mountainous interior areas leads to sudden flooding of inhabited regions downstream. No adequate system now exists to provide warning of the onset of such flood events which in the past have led to severe property damage and loss of life.

III. Project Objectives and Description:

The project would evaluate the hydrological conditions in selected catchments and seek to provide the monitoring capability appropriate to predicting flood events. Areas sensitive to flood events would be identified and a system designed to incorporate monitoring and warning of local inhabitants. Flood plain zoning and the design of storm evacuation systems will also be undertaken.

IV. Country Inputs:

Personnel to operate the system and make forecasts.
Materials for construction and maintenance of hydrometric stations.

V. External Inputs:

Equipment required to establish station network and telemetric system for data collection.

Training in the interpretation of data collected.

Short term consultants (3-6 months) to design system.

VI. Justification for External Support/Interest:

Lack of foreign exchange for equipment.

Applicability of the technique to similar environments in the Caribbean.

The equipment provided will strengthen the normal hydrological monitoring network.

Lack of indigenous expertise.

VII. Responsible Agency:

Office of Disaster Preparedness in collaboration with the Water Resources Division of the Ministry of Local Government.

XI-C-6

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - Emergency Relief Supplies for Montserrat

II. Description of need or problem:

The experience of island communities who have suffered from a major natural disaster has been that outside help takes several days to arrive. The initial help is usually in the form of willing volunteers who arrive without the knowledge of immediate requirements and it may be several days more before the necessary emergency equipment arrives. The major disasters most likely to befall the island of Montserrat are hurricanes and earthquakes, both of which would result in a high degree of damage to water supplies and property, and lead to many people being trapped injured and without potable water. There is, therefore, the need for water storage facilities to ensure the availability of potable water for a reserve of very basic equipment for rescue operations and immediate care of the injured and homeless. It is felt that these are necessary for the following reasons: 1) the sooner help can be taken to the trapped and injured, lives may be saved and suffering alleviated; 2) there is the lesson learned from the disaster in Dominica that the population should feel that it is, from the outset, in a position to begin to fend for itself. Without basic tools and supplies, it cannot do this and morale suffers greatly. There is a need to prevent the occurrence of water-borne disease outbreaks.

III. Description of project and objectives:

The objective of the project is to provide a reserve of basic materials for purposes of search, rescue, and immediate after care to enable the local people to undertake rescue and clearing operations following a natural disaster.

The project provides for the supply of sectional sheet steel tanks, together with the tools and equipment listed on the attached sheet.

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

Government would undertake to provide a secure and structurally suitable building for the storage of equipment and materials. Periodic inspection, care and preservation would also be undertaken.

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

Government does not have the resources to provide the tools and materials listed. In the event of a natural disaster befalling the island, if these materials were not at hand, presumably the international community would come to the aid of government. This would involve costly airlifting and lives could be lost in the period taken for assistance agencies to mobilize.

VI. External financial/technical assistance:

It is anticipated that, subject to receipt of firm quotations, the cost of the project would be on the following order:

Provision and erection of sectional steel tanks	US\$ 70,000
Provision of tools and equipment	20,000
Provision of emergency medical supplies	10,000
TOTAL	<u>100,000</u>

List of Equipment and Tools for Montserrat

- 50 Sectional Steel Water Storage Tanks (800 gals. ea.)
- 12-Man Canvas Tents or equiv.
- 90 Ground sheets
- 90 Cots
- 180 Blankets
- 12 Norwegians
- 12 5-gal Jerry Cans
- 100 Flashlights
- 36 Hurricane Lanterns
- 12 Stretchers
- 10 10-gallon Fuel Storage Tanks
- 20 5-gallon Fuel Storage Tanks
- 100 pairs Water Boots
- 90 pairs Working Gloves
- 36 Cutlasses
- 36 Picks
- 24 Hammers
- 36 Shovels
- 12 Axes
- 12 Saws
- Field Cooking Equipment for 90

XI-C-7

Caribbean Disaster Preparedness Projects Conference
Project Proposal

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - St. Lucia Emergency Support/Relief Preparedness Project

II. Description of need or problem:

While the government of St. Lucia has a plan for the coordination of emergency action in the event of a major disaster, there is a lack of stand-by support and relief equipment with which the responsible authorities can take effective and immediate action. In fact, equipment is lacking in some cases for optimal operation of normal fire control, land and sea rescue, and salvage work. The St. Lucia Fire Service is the only government agency which has equipment, consisting of fire tenders and ambulances, and is located in Castries and Vieux Fort. A disruption of the transportation systems, whether caused by landslides or other natural disasters, or increased requirements for rescue operations resulting from widespread disaster, are considered impossible to cope with for an adequate response by authorities.

In sum, a need has been established by the government for certain equipment which is not normally required for day to day rescue operations but is considered essential for more effective land and sea emergency support and relief.

III. Description of project and objectives:

The objective is to improve the fire control and emergency rescue capability of the St. Lucia Fire Service by providing needed equipment.

Minimum equipment requirements are the following: 1 emergency rescue tender (fully equipped), 1 personnel transport/cargo vehicle, 6 ambulances with support equipment, 2 sea rescue launches, and 1 standby generator for Fire Service Headquarters.

First aid equipment includes stretchers, bandages, oxygen sets, and salvage sheets (polythene sheeting for protective covering).

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

The government has ordered five fire tenders and two ambulances for Castries and other areas. The equipment provided under the project will complete the requirements for an adequate emergency response capability.

The government will be responsible for maintaining the equipment in good operating condition and will provide government salaried operators for the equipment as required.

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

St. Lucia's financial and budgetary resources are not sufficient to purchase the equipment to be provided under the project. The Government considered that the equipment is essential in order to respond immediately and as effectively as possible to disaster rescue needs before foreign assistance could be expected.

VI. External financial/technical assistance:

External technical assistance is required to assist the St. Lucia Fire Service establish the specifications and special requirements of the equipment to be provided as well as to possibly train the operators in-country.

Financial assistance is required to purchase the equipment and for related technical assistance costs.

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

The St. Lucia Fire Service, operating under the Prime Minister's Office, will be responsible for implementing the project.

Caribbean Disaster Preparedness Projects Conference
Project Proposal

XI-C-8

Program Area - Special Country Projects

Chairman - J. Lockard

I. Title - St. Lucia Standby Emergency Water Supply Project

II. Description of need or problem:

St. Lucia's potable water is provided by four river pump (electric powered) diversion stations. The electric power is provided by an electrical grid. One of the four stations has a full diesel standby, one partial, and the other two have no means of standby power. The possible loss of electric power, and/or damage to any of the diversion stations and/or distribution system during a major disaster, requires that standby power and alternative distribution systems be planned for to assure immediate restoration of minimal water supply services. The immediate restoration and provision of safe water after a disaster is essential to prevent health hazards and the outbreak of disease.

III. Description of project and objectives:

The objective of the project is to provide standby emergency equipment to the Central Water Authority of St. Lucia to assure its capability to take immediate corrective action in the event of extended periods of loss of electrical power to headquarters, the water diversion/supply pump stations, as well as to the normal water distribution system.

The Government has established that the minimum equipment requirements to accomplish the above is the following: 1 portable diesel-powered pump--standby for pump stations 300 days. Gallon capacity at 450 foot head; 1 10 kW diesel generator--standby power for Central Water Authority Head Office; 4 portable water tanks--two rigid and two flexible tanks for vehicle distribution of water; 10 bottles of water purification tablets for use in conjunction with portable tanks.

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

The Government of St. Lucia will provide standby power sources for water distribution pumping stations as part of its capital program.

The Government will provide maintenance and manpower resources to insure effective use of the equipment and will provide the vehicles to transport the portable tanks as required.

The Government will make the equipment available to another sister island in the event a disaster affects it and not St. Lucia.

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

The St. Lucian Government has insufficient financial resources to obtain the equipment. External support is requested.

The project addresses one of the more serious potential hazards in a disaster situation, that is, the lack of safe drinking water.

VI. External financial/technical assistance:

The estimated required external financial assistance for the purchase of the equipment is EC\$ 61,300.

No technical assistance is required.

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

The St. Lucian Central Water Authority, under the Ministry of Youth, Community Development, Social Affairs and Sports, will be responsible for the management of the project.

Drafted by: Stanislaus James

Government of the Turks and Caicos IslandsI. Disaster Preparedness - Emergency Water Supply

II. Description of need or problem:

The island of Grand Turk is seven miles long and a mile wide. Most of the island has an elevation of from 0-10 feet above sea level, the exception being a ridge of high ground, at an elevation of 70-80 feet, which runs along the east coast for a distance of about 6 miles. The island, which has a population of 3,500, has no fresh ground water supplies. Drinking water is obtained by collecting rainwater from catchments and storing it in tanks, some of which are public and some of which are privately owned. The population and water storage tanks are almost wholly confined to the low-lying areas. There is a danger that during hurricane conditions a tidal surge of say, 5 feet or more, could result in serious contamination of the islands water supplies. Even without such a surge, experience in previous hurricanes has shown that rain driving across the island is heavily laden with sea water and contamination of the water tanks results - even when connections from catchments to tanks have been broken. On a more positive note, fresh water is stored in circular steel tanks sited above ground at the U.S.A.F. base and the former U.S.N. base. While the base commander's responsibilities are clearly laid down (in disaster conditions he is responsible only for U.S. citizens), one may optimistically assume that some water supplies would be available from the U.S.A.F. and some storage capacity available at the former Navy base. The townsfolk would then be able to rely on some 0.75 Mg. of available potable water. Given a distribution of 5 gals. per head per day, this would give a reserve of about six weeks supply. Before the town's storage tanks could be put back into use, they would have to be drained and cleaned out. Thereafter, the rainfall is so unreliable that a dry spell of three months is not unusual and there may be insufficient rain to charge the tanks for some time. The possibility of bringing in seaborne supplies from the United States or elsewhere is not to be depended upon because a near miss from a hurricane might easily destroy the island's only Jetty.

III. Description of project and objectives:

Assuming disaster conditions, the objective is to provide a potable water supply for the people of Grand Turk for a period of 150 days allowing a consumption of 5 gallons per head per day.

It is proposed to build a storage reservoir of capacity 2 Mg at a site situated on the ridge. The roof of the tank would serve as a catchment and this would be supplemented by a concrete catchment of some 6,500 sq. yds. in area. A small pumping facility would be required to lift water from the concrete catchment area to the tank and pipelines would be constructed to connect the new reservoir to two of the town's tanks.

IV. Actions by country:

Government would undertake to provide the extra tanker capacity which would be required during the period of emergency when townsfolk were being supplied directly from the new reservoir.

Government would provide the land for the reservoir and carry out all necessary earthworks using PWD personnel and equipment.

V. Justification for external support of the project:

The economy of the Turks and Caicos Islands is such that it could not provide these emergency water storage facilities from its own resources. Yet it is just this type of deficiency in a territory's infrastructure which the present seminar has highlighted as a potential and serious hazard in a disaster situation. It is submitted that this is a project worthy of consideration by donor agencies. In the event of a catastrophe, there is little the population can do to help themselves if they are without water. Given a sufficient water supply they will be able to undertake rehabilitation tasks for which outside help would otherwise have to be sought.

VI. External financial assistance:

External financial assistance would be required as follows:

Design and construction of 2 Mg tank	800,000
Construction of Catchment	50,000
Pumping equipment, etc.	10,000
Pipeline	<u>25,000</u>
	885,000

Pending design of scheme say US\$ 900,000

VII. Agency responsible for project:

The Ministry of Public Works and Utilities would be responsible for implementing the project and the works would be under the supervision of the Public Works Department.

Drafted by: R.J. Halstead

Government of the Turks and Caicos IslandsDisaster Preparedness - Hurricane Shelters

II. Description of Need:

The island of Grand Turk is seven miles long and a mile wide. Most of the island has an elevation of from 0-10 feet above sea level, the exception being a ridge of high ground, at an elevation of from 70-80 feet, which runs along the east coast for a distance of about six miles. The population is almost wholly housed in the low-lying areas and is thus vulnerable to any tidal surge which may arise during hurricane conditions. Furthermore, about 80% of the population is housed in wooden buildings which are particularly vulnerable in high winds. In previous hurricanes some of the smaller houses have been lifted bodily into the sea. The remainder of the population lives in houses of sound general construction but with roofs of aluminium or plywood sheeting which also present a hazard in hurricane force winds. Traditionally schools and church halls have been used as shelters and whilst these structures are more sound than the wooden houses, perhaps their greatest attribute is that they assist in boosting morale through the presence of so many family groups under one roof. Undoubtedly none of the shelters used on the island can be considered adequate as a safe house during a hurricane and there is therefore a great need for a shelter or shelters which have been designed purposely to withstand hurricane force winds.

III. Description of project and objectives:

The objective is to find safe accommodation for the population of the island of Grand Turk during a hurricane. The size and elevation of the island is such that half the total population of the country would be in extreme danger given a hit or near miss by a hurricane. Government has therefore been considering a plan to construct a shelter which would house all the inhabitants of the island and would be used generally as a community center. However, it is recognized that a single shelter would have certain drawbacks as regards location relative to population centers, and social and psychological factors. It is considered, however, that a structure of this nature would be similar in cost to four smaller ones having the same gross floor area. The advice of members of the seminar with experience of maximum desirable group sizes will be appreciated.

The building(s) would be of concrete block construction with a concrete shell roof and would be equipped with rest room and kitchen facilities. They would be made available for use by voluntary organizations during normal times.

IV. Actions by country:

Government would provide all land as necessary and all works to ground level would be carried out from the resources of the Public Works Dept.

V. Justification for external support of the project:

The economy of the Turks and Caicos Islands is such that it could not provide such a shelter from its own resources. The recent series of seminars has highlighted the great loss of human life in recent hurricanes and particularly has drawn attention to instances where people have died in large groups as a result of taking shelter in inadequate buildings.

VI. External Financial Assistance:

It is anticipated, subject to production of a detailed scheme, that the project would have a total cost of the order of \$1.4M - or four smaller schemes at a cost of \$0.35M each.

VII. Agency responsible for project:

The Ministry of Public Works and Utilities would be responsible for implementing the project and the works would be under the supervision of the Public Works Department.

Drafted by: R.J. Halstead

Final Plenary Session: Project Review and Summary

At this final session, the project descriptions developed in the committee workshops were summarized and submitted to the assembled delegates for comment and approval. Since the final project documents are presented in Section V. in their entirety, we shall not include summaries here, but, rather, concentrate on delegate comments and suggestions for future action.

Jacqueline Mayers, the Jamaican delegate, summarized the concerns of many of her colleagues in emphasizing the need for:

- dovetailing projects to reinforce relationships between disaster preparedness areas;
- careful consideration of the number and kind of regional disaster institutions to be developed;
- developing the details of country actions and contributions, especially in the area of costs;
- defining expectations concerning government interaction with non-governmental organizations.

Franklyn McDonald pointed out the need for a clearly defined action plan and timetable, and noted that a mechanism for addressing country problems outside the regional project cycle should be developed. Priorities for implementation of the projects must be determined.

Raymond Noel of CARICOM reiterated his organization's commitment to the two regional projects: the UNDR0 preparedness proposal and the building code for the Commonwealth Caribbean.

Alejandro Sundermann, USAID/Barbados, stressed the need for governments to establish a national priority for disaster preparedness.

It was agreed that prompt government response to the project proposals was a necessary first step for program implementation; that some mechanism for coordinating both regional and country activities should be developed as soon as possible; and that this organization should be located in the Caribbean region.

Presentation by Mr. Graham Kelly, the EEC representative

Thank you Mr. Chairman:

In order to confine myself to the time constraints I have prepared a note of my presentation, which you will find in front of you.

The note attempts to define the extent of European Community involvement in Disaster Preparedness, Prevention and Relief and there are two most essential points which I must stress at the outset:

1. Assistance--from the European Community (EEC) as a Community -is complementary to--and may in the event be additional to--any assistance provided on a bilateral basis by the nine member states of the EEC: France, Germany, Italy, Belgium, the Netherlands, Luxembourg, Denmark, Ireland and the U.K.

2. Secondly, assistance from the European Community is contingent upon a request from the state in need and this--I must reiterate--is a precondition of EEC assistance. It will not be volunteered--it must be requested.

Having said that, I must reassure you that the community is entirely sympathetic to the needs of those struck by natural disasters--and to this end makes funds available both under the Lome Convention and outside it.

Under the Lome Convention Article 59 made available to the ACP states--and the OCT states (that is the Overseas Countries and Territories associated with the Community under Part IV of the Treaty of Rome--the non-independent English-speaking Caribbean)--a sum of 150 million EuA (about US\$200 million) as what is termed "exceptional aid". This aid was made available, following a specific request, in two categories:

. Immediate Aid: for the supply of food, medical supplies, tents, clothing and other items essential for the survival of disaster victims--usually in an amount of about US\$400,000 required to be fully disbursed in 3 months.

. Short Term Aid: for the supply of essential foods such as agricultural supplies, fertilizer, seeds, equipment, vehicles, tools, implements, spares, etc.; in this case the funds have to be fully disbursed in 6 months.

Overall, between the two categories, and depending entirely on the magnitude of the emergency and the consequent needs, the Community can provide up to 3.3 million EuA--equivalent to roughly US\$4.5 million.

Under the second Lome Convention, signed in October 1979 and likely to be ratified later this year, with funds commencing early in 1981, the overall amount of 150 million EuA has been increased to 200 million EuA, about US\$250 million--and these funds are in all cases grants--or, if you prefer it, non-reimbursable.

In addition to the Lome Convention there are emergency funds available for non-ACP states under Article 950 of the General Budget of the European Communities--the normal budget of which is 3 million EuA, but following credit

transfers in 1979 some 42 million EuA were in fact spent under this heading.

Additionally, of course, as is well known to all of you, the European Community makes food aid available to all developing countries and special allocations are made available for those with special emergency needs.

As far as preparation and prevention are concerned, the Community has to rely on national and regional European Development Fund (EDF) programs set up under the Lome Convention--and here I must stress again the essential basic requirement for the region--i.e. the Caribbean--to identify its own needs, select its own priorities and apply for its own projects. Right now seven countries in the region have already decided their programs for the 5th. EDF--to run from 1981 to 1985--and although all of them have permitted a small reserve of about 5%, none of them have included amounts for disaster preparedness.

As far as the fifth EDF Caribbean Regional Programme is concerned, the Community has indicated that an amount of about US\$65 million will be available for the Caribbean Regional Projects. So far a list has been compiled totalling over US\$100 million and there has been no mention of disaster preparedness except possibly by way of the Common Services Project for the East Caribbean Common Market (ECCM) countries.

I should also mention at this stage that whatever list is finally agreed for the 5th. EDF Caribbean Regional Countries, it will be for projects related specifically to the ACP and OCT countries associated with the European Community under the Lome Convention--which immediately raises the question whether we should be giving consideration this week to some form of co-financing--perhaps by way of the Caribbean Group for Economic Development, so that non-ACP/OCT territories in the region can be included.

Finally, it may be useful if we take this same Common Services project as a hypothetical example of how the European Community could assist in this current, most important exercise. We have, in the last three months, approved an amount of 4.5 million E.C. dollars--almost US\$2 million--for the setting up of a pool or pools, of expertise to provide common services to the LDC's in the Eastern Caribbean. I can imagine no reason why the administrators of this project should balk if they were to be asked to provide some of these fourth EDF funds to assist with disaster preparedness--and, if necessary provide some form of development bridge until fifth EDF funds can be made available next year.

In conclusion, Mr. Chairman, may I take this opportunity to thank the organizers of this gathering for giving the European Community the opportunity to reiterate its avowed intention to assist development in all its forms in the Caribbean region. We in the Community wholeheartedly support your efforts to try to minimize the trauma caused to innocent people by the natural disasters endemic to the region and we stand ready to assist in this regard in any way we can. It is up to countries in the region themselves now to determine their needs and let us know how we can assist most effectively.

Thank you.

Presentation by Mr. Lars Erikson, the UNDP representative

The primary objective of the United Nations Development Programme is to support the efforts of the developing countries to accelerate their economic and social development by providing them with assistance in the field of technical co-operation, geared to their national development plans and priorities. The assistance provided by UNDP should be for the promotion of increasing self-reliance in the developing countries with regard to the managerial, technical, administrative and research capabilities required to formulate and implement development plans and policies, including the management and development of institutions and enterprises.

To achieve these objectives, UNDP pays special attention to the following subject matters:

1. development of human resources through transfer of skills and know-how and through training activities;
2. preparation of development plans, prefeasibility and feasibility studies, and the acquisition of basic information or data;
3. transfer, adaptation, development and diffusion of technology;
4. development of institutional infrastructure;
5. development of services such as administrative services, consultancy and engineering services, etc.

UNDP does not give loans or grants. Its contributions to the developing countries come in the form of long-term experts or short-term consultants, fellowships, seminars and other forms of training activities. UNDP also provides equipment whenever this is needed in order to achieve the objectives of a specific project, but equipment is usually not a central component of our activities. It has rather a supportive role in relation to the other components. Particularly over the last years, UNDP has also worked through sub-contracting of institutions or enterprises to carry out specific tasks, such as feasibility studies.

Since the beginning of the 1970's, UNDP has been programming its activities on the basis of what we call Indicative Planning Figures and programming cycles of five years duration. The system of Indicative Planning Figures means that UNDP's resources are distributed among developing countries primarily on the basis of their national income per capita and size of the population. These IDPF's are established for periods of five years; the first programming cycle covered the period 1972-76, the second cycle 1977-81 and the third cycle will start in 1982. A certain proportion (around 15-20 percent) of the overall resources are assigned to regional, interregional and global projects.

To give a more precise idea of the magnitude of UNDP assistance, it can be mentioned that the IPF's for Latin American countries for the period 1977-81 vary between 5 and 20 million dollars. In the case of the Dominican Republic, to give one specific example, the IPF is 7.5 million dollars, which means that we spend here an average of 1.5 million dollars per year on technical assistance. The average size of our projects is around half-a-million dollars, but, of course, there is a large variation from very small projects (30-40,000 dollars) up to projects in the magnitude of a couple of million dollars.

In most cases, the Governments, with the cooperation of UNDP, prepare Country Programmes that coincide, as far as timing is concerned, with the IPF periods. Therefore, in the majority of the countries, we are now starting the preparation of Country Programmes for the period 1982-1986. For this reason, as far as my organization is concerned, this is a very appropriate moment to suggest and start preliminary formulation of new projects for execution during that period. As far as the present year, as well as 1981, are concerned, I think it would, generally, be difficult to include new projects in our activities, although I cannot speak, in this regard, with any detailed knowledge of the programming situation in other countries.

UNDP's regional programme is also formulated on the basis of the same five-year periods, and from the point of view of availability of resources, I believe we have more or less the same situation as in the case of national programmes.

Now, in regard to UNDP's role as it relates specifically to disaster preparedness and projects in this area, the Administrator has very recently provided the UNDP Resident Representatives with revised instructions concerning our role in respect of pre-disaster planning, and I would like to quote the relevant paragraphs:

"Responsibility for international action in financing and execution of projects with disaster prevention and mitigation effect lies primarily with the specialized agencies of the United Nations and the international financing bodies. UNDR0 is nonetheless responsible for promoting such projects, that is to say, for ensuring that due recognition is given in development assistance programmes to disaster prevention activities. UNDP Resident Representatives should therefore draw the attention of governments as well as funding agencies to the economic benefits to be obtained from investment in pre-disaster works. It has been shown that in a number of developing countries the regular annual losses of property and production from disasters can be substantially decreased or even eliminated by non-recurring and often modest investment in preventive projects."

"During the process of formulation of a country programme for financing from the UNDP IPF, the Resident Representative should do all that he can do to see that attention is given to the need for progressive planning for disaster prevention and that due consideration is given to this in the allocation of IPF funds."

It is quite clear from what I have just quoted, that UNDP funds can in principle very well be used for projects in the area of disaster preparedness and considering the general mandate and terms of reference of UNDP, my personal interpretation is that we could in the first place finance certain activities in the fields of training, institution-building, planning and research related to disaster preparedness. This refers both to national and regional projects.

Santo Domingo, D.R.
19 May 1980

Presentation by Mr. David Coore, the IDB representative

The Inter-American Development Bank is very pleased to be participating in this conference and to make whatever contribution we can to its deliberations.

The Bank has always worked closely with those international organizations that are directly concerned with the prevention and relief of natural disasters. As a Development Bank we have to be concerned with the effects of Natural disasters on our member countries -- not only for reasons of humanitarian impulse but also because any large scale natural disaster impedes the development process of the country involved and may in some cases directly affect the successful execution of existing Bank projects. Since 1970, the Bank has given financial assistance and technical cooperation on a number of occasions arising out of natural catastrophes, e.g.:

- Peru in May 1970
- Chile in July 1971
- Honduras in Sept. 1974
- Guatemala in Feb. 1976
- Jamaica in July 1979
- Rep. Dom. in Sept. 1979
- Colombia in Feb. 1980

While we feel that our contribution has been of value in all three cases, we recognize that it has not been as effective as we might have wished because of the difficulty of accomodating emergency activities within the normal operating procedures of the Bank that are geared for the long and medium term needs of countries and not for ad-hoc responses. Whenever these situations have arisen in the past, therefore, there has been some uncertainty as to exactly how far and how fast the Bank can move in response to requests for assistance. Since bureaucracies have an innate dislike of improvisation, this has created both operational and policy problems within the institution. In particular, the Bank has never really addressed itself to the central theme of this conference -- namely preparedness for avoiding or minimizing the damage that natural phenomena like hurricanes, earthquakes, etc., can cause as distinct from rehabilitation and reconstruction after the damage has taken place.

I am happy to say, however, that the Bank has now recognized the relevance and importance of this subject and has very recently taken actions that will, I think, be of interest to this conference.

Firstly, we have been fortunate to get onto the staff of the Bank my colleague Mr. Ricardo Peralta as an expert advisor and consultant in the whole field of disaster prevention and relief. Mr. Peralta played a notable role in the reconstruction of his own country--Guatemala--after the devastating earthquake in 1976 and his hard-won knowledge and experience is available to the Bank and its beneficiaries.

Secondly, just a few weeks ago, the Board of Executive Directors of the Bank approved a set of policies and operating procedures that indicate the areas and ways in which the Bank can assist in the kinds of programmes that may emerge from this conference.

These policies and procedures are set out in an official policy document which will guide the Bank's activities in this area. I cannot circulate it as I do not think it has yet been cleared for general circulation. I will, however, read some relevant extracts which I think will give you a fair picture of the kind of assistance that is potentially available from the Bank.

From these extracts I think you can see that, whatever may have been our shortcomings in the past, the Bank now has a clear and positive approach to contributing towards the kind of projects that hopefully will emerge from this conference.

That is the good news -- the bad news is that notwithstanding the foregoing there are a number of important constraints on our ability to help, which you will have to bear in mind.

Firstly, the resources of the Bank, whether for loans or technical co-operation, can only be used for projects within member countries of the Bank. Only six of the countries participating in this conference meet this qualification - namely - Barbados, Guyana, Haiti, Jamaica, Republica Dominicana and Trinidad and Tobago. There is one qualification on this however. The IDB can make loans and Technical Assistance available to the Caribbean Development Bank for the purpose of projects within the region served by that institution.

Secondly, the Bank cannot make grants or general purpose donations. We can, however, provide a limited amount of what is called non re-imbursable technical co-operation assistance. As far as the beneficiary is concerned, this has the same financial effect as a grant, but it has to be for a specific defined purpose or project within the norms of the Bank and within a specific member country or group of member countries.

Thirdly, in order to qualify for loan assistance or technical co-operation, projects have to be put forward by Governments or with the approval of Governments of the member countries and have to be analyzed and approved by the relevant departments and entities within the Bank in accordance with the Bank's operating procedures. This is obvious of course, but as a good and loyal bureaucrat, I have to make a specific disclaimer of any power to commit the Bank in advance to any particular project or group of projects.

Even within these caveats and limitations, however, I do feel that the Bank is in a position to give useful help to some, at any rate, of the projects that may eventually emerge from this conference.

Two final points:

(a) Major development projects funded by the Bank usually have a long period of gestation, anywhere from 6 months to one year.

However, in the case of technical co-operation assistance and emergency loans for rehabilitation and reconstruction we do speed up our procedures considerably and a decision can usually be obtained within 8-10 weeks. In some types of technical co-operation the period may in fact be much shorter. Much depends on the extent and quality of the initial preparation of the request.

(b) The second point, which follows from the first, is that the entity within a country that is responsible for disaster preparedness and which may wish to obtain IDB assistance for any project should inform itself thoroughly beforehand as to the procedure for making applications to the Bank and as to the standard types of information that the Bank requires in support of loan requests. This information is not difficult to come by because in each member country there will be functionaries in the Central Bank or the Ministry of Finance who are familiar with the Bank's procedures. In addition there is a local representation of the Bank in each member country staffed by a number of specialists who will give whatever information or assistance is required in the preparation of loan requests. In practice, it saves a lot of time if the borrowing entity makes contact with the representative and discusses the project or the proposal informally, before the formal request is submitted.

Extracts from Policy Document

Definition of term "natural disaster"

For purposes of this policy, the term "natural disaster" is considered to refer to any emergency due to the action of natural forces that causes deaths, damage to the physical and service infrastructure of any member country, or a loss of material goods so extensive that economic and social development is affected.

General Policy

For assistance to countries suffering natural disasters, the present policy envisages four stages that must be dealt with and that usually overlap:

- A. Prevention
- B. Emergency
- C. Rehabilitation
- D. Reconstruction

A. Prevention stage

This stage consists in action designed to prevent or reduce the risks of a natural disaster; it covers the protection of human life, the infrastructure, facilities, and objects.

B. Emergency stage

1. Identification of emergency

An emergency is the situation at the moment the crisis due to the natural disaster occurs, and is characterized by the following features:

- a) Normal activity is disrupted in the stricken areas or throughout the country.
- b) There is destruction of public services, housing, public and private buildings, industrial and commercial facilities, roads, and so on.
- c) It becomes necessary to:
 - 1) Clear and clean up the area.
 - 2) Activate such routine emergency services as the police, firemen, and public-health personnel or military units for rescue and salvage operations.
 - 3) Supply the population with the vital necessities they obtain for themselves in normal times, such as food, housing, and personal welfare needs.
 - 4) Take special measures for medical treatment.

5) Carry out rehabilitation and reconstruction programs.

C. Rehabilitation stage

In regard to disasters, the term "rehabilitation" is taken to mean an action or series of actions designed to rehabilitate or restore a thing to its state before the disaster. Rehabilitation may be temporary or permanent.

D. Reconstruction stage

Reconstruction is to be understood as the series of efforts and activities that must be undertaken to replace the physical and service infrastructure, housing, productive goods, and the various material goods that have been destroyed.

Bank cooperation with members during prevention and emergency stages

The Bank will support the initiatives of member countries designed to reinforce their preparedness for emergencies and their capacity to predict and prevent disasters and to study measures designed to alleviate the effects of disasters on human and economic affairs through the following action:

1. Cooperating with member countries that have been or may be affected by natural disasters in investigating the causes of the catastrophe and analyzing and evaluating the damage, for the purpose of establishing suitable preventive measures against future natural disasters. These preventive measures should in particular cover financing and technical cooperation in regard to projects and works that may help to prevent or reduce the effects of a future natural disaster.
2. Supporting financing and/or technical cooperation to deal with immediate needs due to the emergency that are designed to put people back to work and ensure the continuity of production systems, especially of small and medium agricultural, handicraft, industrial, and service enterprises.
3. Encouraging governments to take account in their development planning of the danger of natural disasters and of any undesirable effects that the execution of the projects may have on the environment, specifying the degrees of risk existing in each area, in order to locate construction at sites affording the greatest safety; also, encouraging them to include earthquake protection measures in plans for infrastructure construction in general.
4. Supporting the creation, organization, and strengthening of civil defense systems by granting financing and/or technical cooperation.
5. Maintaining close relations and coordination with agencies responsible for preventing and dealing with disasters, for the exchange of information and experience that will help to mitigate the effects of natural disasters in member countries.

Technical Cooperation

The Bank will use the resources and mechanisms of technical cooperation available to it to support, insofar as necessary, the realization of the objectives referred to in this policy. In doing so, it will take account of the fundamental need for a rapid, suitable, and effective response to the countries' requests for assistance.

Technical cooperation resources, unless otherwise provided under this policy, will be used as established in the Technical Cooperation Manual, basically for the following purposes:

- A. Technical cooperation for immediate needs arising from an emergency:
 - 1. The supplying of experts and workers to evaluate the damage and restore essential public services immediately.
 - 2. The institutional strengthening of the national organizations responsible for these services.
- B. Technical cooperation for medium-term needs:
 - 1. Sectoral studies, identification of projects, and preparation of rehabilitation and reconstruction programs.
 - 2. Training to meet new demand for human resources.
- C. Technical cooperation for long-term needs:
 - 1. Assistance in preparing for emergencies and predicting disasters, the latter preferably on a multinational scale and in coordination with the international agencies responsible for predicting and preventing natural disasters.

When the nature of the disaster requires the formulation of loan projects through the provision of technical cooperation, the Bank will see that these projects are formulated in accordance with the norms of this policy and other applicable policies.

The President if authorized to approve, on his own authority, technical cooperation operations for the country concerned to the amount authorized in general by the Executive Board for any field of activity covered by the Technical Cooperation Manual and in regard solely to the most immediate needs arising from a natural disaster. The funds will be used to pay fees, travel, per diems, and other amounts payable to consultant firms, specialized organizations, and/or individual experts, and to finance the purchase, carriage, and insurance of equipment, tools, and materials necessary for reaching the goals of the operation. The funds for each operation will be managed by the Bank or by the appropriate authorities in the country concerned, as considered most suitable in each case.

The funds authorized for these operations will constitute nonreimbursable technical cooperation, and to ensure an adequate volume of readily available funds, the Bank will grant priority access to the Fund for Special Operations (FSO) for these operations.

HEALTH EMERGENCY PREPAREDNESS IN THE CARIBBEAN

May 1980

1. Objective of the Project

To contribute to the process of development and self-support of disaster-prone countries in the Caribbean through pre-disaster planning and training in the health sector.

2. Place of Implementation

The project will be implemented by PAHO in cooperation with CARICOM and other agencies in countries selected for the program on the basis of their vulnerability to natural disasters:

- All Caribbean countries and territories: Anguilla, Antigua, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Caymans, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Montserrat, Nevis, St. Kitts, St. Lucia, St. Vincent, Trinidad and Tobago, Turks and Caicos.

3. Background Information

The Caribbean countries are closely interdependent in terms of health programs and disaster-related activities. On the one hand, factors such as:

- the small size of most countries with the corresponding scarcity of human and economic resources;
- the geographic isolation and/or dispersion of part of the national population in a large number of disaster-prone islands;
- the diversity of cultures, languages, economic and social systems;
- the widely different levels of development,

contribute to the increasing demand for technical cooperation and support before and during emergencies. On the other hand, there is a recognition by the Caribbean countries, individually or through the Caribbean Community (CARICOM) representing the English-speaking countries or territories, that programs and materials developed for use in developed countries or Latin America require extensive readjustments, if not a thoroughly original approach, based on the specific features of the Caribbean.

3.1 Health Situation

There is a considerable diversity of health systems and policies in the Caribbean. For instance, in the West Indies health policy, although still largely unwritten by individual territories, is directed toward the achievement of several clear cut objectives: provision of health services to the entire population free of charge or at the lowest possible cost; extension of coverage and improvement of the quality of care; reduction of gastroenteritis and malnutrition; improvement of maternal and child health services; maintenance of effective immunization programs; improvement of environmental health conditions with special reference to provision

of safe drinking water and sanitary disposal of human and solid wastes; development of adequate numbers of trained manpower, and promotion of health education in order to achieve community participation in the provision and development of health services.

It should be noted that the mean mortality rate of the 1-4 age group is around 3 per 1,000 inhabitants and that in this age group some deaths are due to diseases which are preventable by immunization. With regard to water supply, although between 70-95% of the population is recorded as having access to water supplies, these indices mask the fact that the area suffers from chronic shortages of water. The situation is much more unsatisfactory with wastewater systems and sewage disposal.

3.2 Vulnerability to Disasters

Depending on the location of the countries, natural hazards, like earthquakes (e.g. Trinidad and Tobago), volcanic eruptions (St. Vincent, 1979), hurricanes (all islands, as illustrated by serious disasters in Barbados, 1955, in Haiti, 1964 and hurricanes David and Frederick in Dominica and the Dominican Republic, 1979), floods (in the Dominican Republic and Jamaica, 1979) and drought with its sequel of malnutrition (in Haiti, 1974 and 1977). The authorities expressed their need for cooperation in the field of technological disasters, such as air crashes, explosions, major fires, etc.

The impact of natural disasters is worsened by the particular weakness of the health services and the government's structures. A total disruption of the smallest islands is common in case of natural disasters. For instance, the temporary evacuation and care of 10,000 persons constituted a major problem in St. Vincent (population less than 100,000 inhabitants). Although of modest dimension on the global scale, this emergency may overwhelm the government's capability and require extensive managerial and economic support from the Caribbean and international communities.

3.3 Emergency Preparedness

3.3.1 The disasters in 1979 (floods in Jamaica, volcanic eruption in St. Vincent and the hurricanes in the Dominican Republic and Dominica) underline the lack of preparedness in the health sector and the urgent need for adequate training of the essential personnel in most of the countries.

3.3.2 The level of preparedness in the Caribbean varies from country to country. For instance, in Barbados, Cuba and Jamaica an effective plan and coordination mechanism has been established which is periodically updated. This may provide a guide and model for pre-disaster planning to other countries. In Haiti and most of the small islands the preparedness level is critically low and will require extensive technical cooperation.

4. Proposed Activities

4.1 Emergency Preparedness of the Health Sector

- 4.1.1 Strengthening or establishing a sectorial disaster plan and a technical program on emergency preparedness within the health sector of the countries. In the Caribbean, the ministries of health will be encouraged to assign this responsibility to a senior health official as the limited resources will not justify a full-time post at country level.
- 4.1.2 A review of the existing disaster emergency legislation relevant to the health sector.
- 4.1.3 Adaption of the regional or general manual and training material presently available and in development under the PAHO regional program to the distinctive features of each national situation.
- 4.1.4 Formulation of technical guidelines for disaster relief in the health field (completion of the standard list of drugs and equipment, standardization of the medical treatment of mass casualties, etc.) and a local inventory of foreign agencies likely to provide health assistance in major disasters.
- 4.1.5 Support of short training sessions for health officials (e.g.: hospital administrators and medical officers in rural health centers) at national or regional level.
- 4.1.6 The development of simple educational material for the benefit of the general population in order to promote community participation.
- 4.1.7 Support and promotion of participation of the scientific community through applied research, technical evaluation of the material developed, and the inclusion of disaster management in curricula of medical schools, in particular, the University of the West Indies.
- 4.1.8 Establishment of limited stockpiling of emergency equipment (i.e. laboratory supplies, sanitary engineering equipment, drugs, field communication sets, etc.) at regional level. Maintenance could be monitored by PAHO, CARICOM or other suitable agency or government.
- 4.1.9 Improvement of existing emergency facilities (emergency medical services, generators, laboratory emergency support, etc.).

4.2 Assessment of Needs in Case of Disaster

4.2.1 The lack of accurate information on the extent of damages and the priority needs in the health sector is the most critical factor affecting the decision making process, both in the affected country and in the international community wishing to assist in the emergency phase.

The assessment of needs and the determination of priorities is the prime responsibility of the affected country. It is however a technically difficult task for which most Caribbean countries are presently not prepared.

4.2.2 The following activities will be carried out in cooperation with the following countries:

- . identification of health professionals with broad experience in disaster relief management to be included in the roster of emergency experts of the Organization, of Member Countries, and of other recognized organizations (activity in progress);
- . training of selected nationals to constitute a source of stand-by expertise and a local team to undertake the assessment of the needs in the health sector following the impact of a disaster;
- . direct support of the assessment activities carried out at national level through PAHO staff member's technical cooperation;
- . temporary assignment of experts from neighboring disaster-prone countries (roster of emergency experts) and material assistance (logistics, communication, transportation);
- . scholarships/fellowships to nationals from member countries to participate in courses/seminars on disaster assessment and management organized outside the Region (e.g. WHO-sponsored course to be organized in Europe in November 1980).

5. TENTATIVE BUDGET (5 years)

	<u>TOTAL</u>
Project Manager, including travel (technical cooperation, general coordination of the activities).....	US\$250,000
Technical Officer/Consultants.....	60,000
Seminars/courses/training	
. one annual course at Caribbean level (5 days, 40 participants).....	220,000
. one national course every second year (5 days, 20 participants).....	140,000
Documentation, manuals, visual aids, public education.....	90,000
Feasibility studies (stockpile).....	10,000
Support of simulation exercise.....	35,000
Limited equipment stockpiling (critical items only).....	100,000
Analysis of vulnerability of essential services.....	15,000
Contribution/support of corrective measures.....	<u>150,000</u>
	US\$1,070,000
Miscellaneous: unforeseen requests, inflation (15%)	<u>160,500</u>
	<u>US\$1,230,500</u>

6. Supervision and Evaluation

- Emergency preparedness being essentially a component of each and every health program, the proposed project will be integrated into other activities carried out at country level with PAHO technical cooperation (especially development of health services, environmental health, and disease control).
- Direct supervision will be exercised by the PAHO Area and Country Program Coordinators/Representatives.
- Technical supervision and support will be provided by the PAHO Regional Advisor on Emergency Preparedness, in addition to that provided by the Program Manager recruited for this program.

- Evaluations will be carried out by the Regional Advisor and short-term consultants during field visits. In addition, the strict standards of the internal programming and evaluation system (AMPES) developed by PAHO, will be applied to the program. In each project, the detailed activities completed and in progress will be compared periodically with their parts of the program. The extent and causes of discrepancies between anticipated and actual achievements are coded and analyzed by computer.
- The establishment of a special advisory committee with participation of national experts is planned.

HEALTH EMERGENCY PREPAREDNESS IN THE CARIBBEAN
Programmatic Areas of Cooperation

I. PLANNING

- . Preparation of a model disaster plan for the health sector.
- . Preparation of a model plan for hospitals, including simulation exercises.
- . Vulnerability analysis of:
 - . health system/facilities
 - . water systems

II. TRAINING

a) Training of small select group of experts (health sector):

- . high level managers/coordinators
- . hospital administrators
- . utility managers and sanitary engineers
- . logistic/supply managers

Need for:

- . technical support
- . political support
- . funding

b) Training of middle level health professionals.

Regional workshops by discipline:

- . special workshops (e.g. nurses, engineers)
- . inclusion of disaster preparedness as a topic within all meetings organized on other subjects.

National multidisciplinary workshops/courses (each country or group of countries with identical problems):

Need for:

- . technical adaptation of existing material
- . funding of meetings and of technical cooperation

c) Training of the general public by inclusion of the topic "Emergency Preparedness" in the health education programs:

- . standardized leaflets
- . broadcasting time
- . video-tape

Need for:

- . technical support
- . funding of technical cooperation
- . funding of broadcasting time/video-tape

III. STRENGTHENING OF OPERATIONAL CAPACITY

- . Regional stockpile of supplies (following cost/benefit and feasibility studies);
- . Increased inventory of drugs and emergency materials;
- . Emergency rooms and laboratory support (through CAREC and CARICOM);
- . Communication facilities (institutions and/or field teams).

PUBLIC AWARENESS IN DISASTER PREPAREDNESS

INTRODUCTION

1. Last year a Caribbean Seminar on Disaster Preparedness held in St. Lucia recognized that public information and education were essential components of a National Disaster Plan. The Seminar recommended therefore as a matter of priority that:

- (a) a program of public education be undertaken. This program should highlight human safety and the reduction of human and economic loss and draw attention to details of National Disaster Preparedness Plan;
- (b) a list of simple disaster terminology be compiled, published and widely disseminated.

2. The contributions to this seminar and the survey which was conducted by the USAID Caribbean Disaster Preparedness Assessment Team in the region indicate that there is a general absence of disaster consciousness in the region. As a result, there was little or no knowledge of the kinds of disasters which are likely to affect a particular country and the kind of damage which is likely to follow any of these disasters. Also, little was known of the predictions, warnings and procedures which indicate that disaster was imminent.

3. It was discovered too that there were only a few educational programs geared to creating the kind of public preparedness which could save a life through paramedical care, the provision of food and water or temporary shelters for those cut off by the disaster.

4. This paper argues that the public information and education component of a national preparedness plan should be geared to:

- (a) raising the consciousness level of the population to the kind of disasters, and the nature of the damage that are likely to occur; and
- (b) education of the public in the techniques of preparedness.

MASS MEDIA

5. In any crisis people are calmed and reassured by the voices, faces and names of people they know and feel comfortable with. Mass Media personnel create strong bonds with the public and therefore are important avenues for dissemination of information in times of national disasters.

6. It is known that the Mass Media's role in disaster preparedness is vital and should therefore be clearly defined in a National Disaster Plan. Newspapers, radio, television stations can assist with demystifying disaster threats by teaching appropriate responses to specific situations and also by disseminating information on preventive measures and preparedness plans. Keeping people accurately informed of what is happening just before, during and immediately after the disaster is another major function.

7. The media, however, has a responsibility to publish only accurate information, thus reducing the panic which can result from sensational reporting. Governments can contribute to this by taking the media into their confidence and keeping them properly briefed on matters of public interest but which may not be considered suitable for immediate release.

Government's Information Role

8. It has been pointed out by people who have worked in disaster situations that it should not be assumed that educating the public and providing information are of themselves sufficient to ensure that individuals will respond to warning on the basis of knowledge. Human response to disaster threats reveals very diverse patterns. Warnings must therefore be supplemented as necessary by clear instructions informing the public what it should do. Also, provided that the public is educated and well informed about the dangers resulting from hurricanes, earthquakes and floods, etc., there can be reasonable confidence that warnings and the accompanying instructions will receive a proper response. The objective is to create a partnership with Governments and people so that disaster preparedness is recognized as a joint responsibility.

9. Governments through their information service and Emergency Secretariat can contribute throughout the year to the general education of the public. These programs can be executed by a number of activities through press relations programming such as radio, television, daily newspapers and film. For example:

Local and Regional Broadcasting - documentary and news films, video and photographic records.

Audio Visual Services - Photographs, transparencies, T.V. stills and promos, photo packages, audio tapes and cassettes.

Exhibitions, Displays and Demonstrations - including information racks, closed circuit television programs.

Effective Image - by using Logos, letter heads and car stickers.

Publications - leaflets, manuals, handbooks, reference guides, brochures, etc. It is also important to have facts on past disasters in the region as well as lists of First Aid supplies, Survival Hints, Newsletters, National Disaster Preparedness Plans and others.

Visual Aids - Posters, bulletin board notices.

Various International Communications Programs for -

- (a) Administration
- (b) Employees in disaster related jobs, as well as employees in general, may be made available by newsletters or magazines.

Other Channels for information to the public can include speeches, "Call-in" programs on radio, seminars, conferences, community discussions and workshops. It is also necessary to have special events such as Disaster Simulations, National Disaster Preparedness Information Day/Week/Month and special newspaper editions during the Hurricane Season.

10. Disaster Preparedness education is, however, a specialized area and Government Emergency Secretariats should devise training programs in conjunction with international organizations for both Government Information personnel and members of the private news media.

11. Training in broadcasting for journalists, public administration, disaster management and disaster research are a few areas which come to mind.

Community Involvement

12. Special campaigns should be designed and directed at school children. Disaster information can naturally be incorporated in such appropriate subject areas as Science, Geography, Social Studies, Current Affairs, Home Economics, Youth Development Training Courses.

13. Community groups, clubs, and Religious Organizations have a role in the Disaster Preparedness Information program and must be involved.

14. Training in first-aid, use of the CBers and Radio Hams, understanding of disaster signals, warnings, and general techniques in coping with shock, inertia, and so on, should be included as part of the activity of all voluntary and social organizations in the country. Community leaders, both in the public and private sectors, can play a vital role in getting this program on the way.

15. Ultimately, linkages made by human beings, the contact, the sharing of experiences, the extended family networks, the relationship with local leaders and local bonds with voluntary organizations will be the most effective agents of education and this vehicle is one which is most often overlooked by policy makers and planners.

Communications

16. Looking ahead in our telecommunications areas, Satellite development will feature as a disaster related communications item in the eighties. The Caribbean islands, fragmented as they are, will in the future be using the Satellite to communicate with each other in the case of disasters which may wipe out normal communications networks. Satellites, however, may be most useful in the Caribbean for training. Seminars and workshops conducted in one island can involve people in other islands.

17. It is evident that the Transistor Radio has a vital role in the awareness program since these are portable and can be transported easily.

Conclusion

18. Finally, this brief outline indicates some of the areas of study as well as possible assistance which the Caribbean needs.

Training of personnel, equipment for use by communicators, a library of Audio Visual Aids programs which can be shared by the region, studies of the strengths and weaknesses - Communication network of each island, and proposals for strengthening weak areas are some of the things which this conference may wish to investigate.

Grace F. ...grin,
Secretary, C.E.R.C.

LEAGUE OF RED CROSS SOCIETIES

GENEVA

FIRST AID TRAINING

(Basic requirements for First Aid in natural disaster)

May 1980

FIRST AID TRAINING

The major aim of First Aid Training Programmes is to impart to the layman knowledge and skills which will enable him to assist a person in physical distress, generally due to an accident or sudden illness, until more qualified aid can be provided. It also aims at informing people on how to summon such aid.

First Aid in Disaster Preparedness

We recognize the need for First Aid Training in Disaster Preparedness Programmes for, basically, two target groups, namely:

1. People living in disaster prone areas
2. Personnel providing, or assisting in the provision of, qualified medical aid

1. People living in disaster prone areas

It is commonly known that in any kind of natural disaster the most crucial period for the casualty is from the moment he or she becomes injured until the time qualified aid can be made available to him or her.

Anticipating that the functioning of the usual medical facilities will most likely be severely disturbed by the effects of the disaster, the casualty's well being will depend on the quality of aid which can be provided by the people in the immediate environment.

As the efficiency of First Aid is directly related to the number of people trained, the quality of their training and their readiness to apply their skills when needed, we are faced with the fact that a great number of people need to be given a high-quality training.

Public authorities and non-governmental organizations such as National Red Cross Societies, should make all possible efforts so that as many people as possible can be trained in First Aid.

To promote this idea and to facilitate the dissemination of such training the programme should be:

- effective - limiting its content mainly to life-saving measures and techniques,
- easy - concentrating on demonstrations and practical exercises rather than on theoretical lectures,
- short - not more than 10 hours long to avoid or reduce "dropping-out".

As most of the First Aid courses presently taught are too comprehensive to meet those requirements, it may become necessary to develop a new concept for the teaching of

Basic First Aid

The elements of the curriculum should be:

1) Unconsciousness

Every unconscious person, provided his respiration functions spontaneously, is to be placed in a safety position which will provide the anatomical conditions to keep the air-passage free. Every unconscious person suffering from a respiratory arrest must receive artificial respiration.

2) Artificial respiration

Methods of expired air insufflation are considered the most effective means of artificial respiration and are to be taught. Artificial respiration is to be applied as soon as possible and has to be continued until spontaneous respiration recommences or qualified aid can be provided.

The establishment of a free air-passage by applying a hyperextension of the casualty's head is considered the first action to be taken in the application of artificial respiration.

In Basic First Aid courses the teaching of any alternative method is not recommended.

3) External bleeding

The application of hemostatic procedures is one of the measures to be applied immediately and in a gradual and progressive manner:

- i. Direct pressure and a pressure bandage are to be applied on the point of bleeding. If the injury is located on the limb, additional raising of that limb is required.
- ii. In cases in which the above measures are insufficient or cannot be applied, pressure may be directed to the corresponding arterial trunk.
- iii. Finally, and only if the circumstances require, or if the previous procedures have failed, a method of circular compression (garrot, tourniquets) may be employed, taking into consideration the possible risks.

4) Shock

It is recognized that all injuries or sudden illnesses may cause shock to a life-threatening extent. Therefore, the immediate application of shock prevention measures is emphasized in all subjects taught.

The above mentioned subjects are considered core-subjects and are a "must" in all Red Cross First Aid programmes. They may be supplemented according to locally defined needs, bearing in mind that the time-limit suggested for this kind of training should not be exceeded.

2. Personnel to provide - or assist in providing - qualified aid

Assuming that all national disaster preparedness plans foresee the immediate dispatch of organized mobile medical units into the disaster stricken area, it is essential to place the greatest possible emphasis on training the members of these units.

Although it is not the purpose of this paper to make any suggestions about the composition of such medical teams, it can safely be anticipated that a great number of their members will be volunteers, trained to assist and supplement professional medical personnel.

The major reason for using non-professional personnel in such teams may be:

- i. lack of sufficient numbers of professional staff available for this purpose in disaster situations;
- ii. relieving medical and para-medical staff to concentrate on tasks requiring more advance intervention;
- iii. economical considerations;
- iv. volunteers can/should be used as staff of temporary or permanent First Aid posts, ambulance services, etc. in non-disaster times.

The National Red Cross Societies and other voluntary agencies should be given the task and means to recruit and train such volunteers in sufficient numbers, well ahead of the time they will be needed.

Based on an assessment of training programmes which a number of Red Cross Societies have developed for this purpose, the following suggestions are made:

In addition to their training in Basic and Advanced First Aid (for curriculum see annex) all volunteers wanting to serve in a medical disaster unit should successfully complete a Proficiency First Aid course. The objectives of this course are to raise the performance to an extent that enables the trainee to purposefully assist medical personnel in disaster situations, and to assume full responsibility for the tasks assigned to him.

Proposals for the content of Proficiency First Aid courses

- . Repetition and intensified teaching of all subjects of Basic and Advanced First Aid plus
- . Structures and functions of the body (anatomy and physiology)
- . Types of wounds
- . Types of fractures
- . Injuries caused by corrosives
- . Transportation of casualties by standard and improvised means
- . Elements of basic nursing
- . Advanced teaching of shock prevention and treatment
- . Assessment of situation at the scene of an accident
- . Tactics of search, rescue, first aid and transport in cases of disaster
- . Rules for co-operation with other agencies and organizations (fire brigade, police, armed forces, St Johns, etc.) in cases of disaster.

The fact that we have not elaborated on the skills and knowledge required of professional medical and para-medical staff in cases of disaster does not indicate that no additional training is needed. It is anticipated that suggestions will be brought forward from other sources.

All Red Cross Societies in the Caribbean Region have first aid training programmes. The contents vary but it would take little effort and encouragement to establish a regional training concept which would effectively meet the particular basic training requirements of people living in disaster prone areas, as well as of volunteers serving in medical disaster units.

ANNEX

ADVANCED FIRST AID

The objective is to provide adults with a comprehensive course, teaching skills and knowledge necessary to deal with life threatening situations and other forms of physical distress.

Content

Advanced teaching of the same content as in Basic First Aid, plus

- . Head, neck, spine injuries
- . Immobilization of fractures
- . Wounds
- . Burns
- . Poisoning
- . Chest and abdominal injuries
- . Medical conditions
- . Bandaging
- . Calling for qualified aid
- . Injuries due to heat and cold

It is strongly recommended that in both Basic and Advanced First Aid courses theoretical explanations are kept to the absolute minimum required whilst emphasis should be placed on practical exercises.

DOMINICA

WEST INDIES

EXPERIENCES OF 1979 HURRICANES

"DAVID" AND "FREDERIC"

Presented by: CURTIS J. LLOYD, Delegate
Government of Dominica

May 12, 1980

DOMINICA

WEATHER REPORTS (Radio Antilles)

By midday of 28th August, 1979, a hurricane warning was in effect for Barbados. Hurricane "David", described as one of the most dangerous for the century, was expected to hit Barbados at about midnight, August 28, 1979. Gale warnings had been issued in respect of Dominica and storm warnings for Martinique and St. Lucia.

By 10.00 p.m. on 28th August, 1979, it was known that David was threatening Martinique and would by-pass Barbados and St. Lucia. Storm warning was in effect for Dominica.

On 29th August, 1979, the 6.00 a.m. Antilles weather report indicated that "David" had changed course slightly and that the centre was expected to pass over Dominica about midday of that date. The Dominica Broadcasting Service gave very much the same information in the 7.15 a.m. weather report.

Later reports advised that the hurricane posed no direct threat to Martinique and/or St. Lucia. There was no mention of the situation with regard to Dominica and residents could not determine whether or not hurricane David was still headed for Dominica.

Hurricane warnings received at Melville Hall Airport on the afternoon of 28th August were transmitted to Roseau by telephone. However, later warnings could not be transmitted as the communications link between Melville Hall and the city had been broken down.

In terms of hurricane David, therefore, Dominicans were not given sufficient advance warning and were generally unprepared for the onslaught. As a consequence of this state of unpreparedness the population was not able to seek refuge in emergency shelters.

SHELTERS

Government schools and churches throughout the island have always been regarded as the safest buildings in which to weather the high winds of a hurricane. This is probably because they are generally the most spacious structures in our communities. However, judging by the number of schools which were destroyed and the number of churches which suffered severe damages, it can be argued that the insufficiency of the warning (information) might have actually saved several lives.

Can we then deduce that timely warnings have no value in disaster preparedness? How will the population react if and when timely warnings are issued in future? Will they be ignored in the light of the "David" experience? To answer these questions one has to view David for the unique experience that it has been. Although there is reason to suspect that some designated hurricane shelters were definitely unsafe, what buildings could really have withstood the onslaught of near 200 m.p.h. winds? It can be argued that, had the highest winds persisted for another 15 minutes, Dominica might well have been blown off the face of the earth.

What is certain, however, is that adequate warning would have given the population time to secure stocks of food, water, fuel and medicines for the early part of the post hurricane period.

E.O.C./EMERGENCY OPERATIONS CENTRE

It is normal for the Central Hurricane Committee to meet immediately prior to the hurricane season to set up Local Relief Committees, to identify emergency shelters and to review the action plan for preparedness (disaster). No such meetings took place during 1979 as all interest was directed towards re-organization following the political crisis of May-June 1979.

On the evening prior to Hurricane David the Minister of Home Affairs gave an address on local radio requesting that safety precautions be taken by the population and indicating the location of emergency shelters where people would be required to congregate in the event that the island was struck. It is to be mentioned here that these buildings are not generally equipped with water supplies, medical supplies, food or other requisites connected with disasters or relief. At about 3.00 a.m. of 29th August persons in the south of the island (Soufriere and Scott's Head, Grand Bay) were alerted when it was reported that "David" was heading for Martinique and St. Lucia and it was then known that that section of Dominica would have been affected because of its proximity to Martinique and St. Lucia. This alert was channelled through the Police Communications network.

At about 9.30 - 10.00 a.m. on 29th August, just prior to the hurricane, and when it was quite evident that Dominica would have been struck, a meeting of the Central Hurricane Committee was convened at Government Headquarters at which meeting it was decided that the Emergency Operations Centre would be set up at Police Headquarters. During the course of the meeting the hurricane force winds started.

So hurricane "David" blasted Dominica for some 6 to 7 hours and left a toll of some 40 dead and several injured in its wake. The loss of personal property (buildings, etc.) was phenomenal and the entire agricultural base was destroyed. All communications were destroyed also. At the end of it all one got the impression that a huge fire had raged through the island and razed everything to the ground.

It was only at about 5.30 to 6.00 p.m. that people generally started moving out of houses (at least in Roseau).

Soon after the passage of the hurricane the Central Hurricane Committee met to set up action groups to perform specific tasks. The first task of the Central Hurricane Committee was to seek out sound buildings and those not too badly damaged to be used as relief centres. This proved more difficult than would have been expected because many of the designated emergency shelters were themselves destroyed. It is assumed that similar action was taken up to the Hospital which was itself extensively damaged and it was later decided to use Government Headquarters as a relief centre for treatment of the injured.

With many persons homeless the population of Roseau crowded around Police Headquarters and Government Headquarters, causing traffic bottlenecks. The situation was made more chaotic with nightfall and the total absence of electricity. The homeless sought refuge in storerooms, cellars and the Emergency Operating Centre, in fact, wherever there was the semblance of a roof. Few slept on that night.

COMMUNICATIONS

The first news of the hurricane to the outside world was transmitted by a ham radio operator who continued operating throughout the hurricane.

On 30th August, a.m. 1979 the H.M.S. Fife (British warship) arrived in Port and transmitted the first S.O.S. for assistance to Dominica. The Fife personnel set up the makings of an office at Police Headquarters and established a radio communications link between that office and the battleship. The Venezuelan Army came in later and set up a network tying in the Melville Hall Airport, Police Headquarters and Venezuela.

With all roads being blocked messengers came in to Roseau by foot over long distances to report deaths and injuries from their areas. The local population all over the country played a major part in clearing of roads to allow movement of relief supplies and personnel throughout the island.

The hurricane warnings did not allow sufficient time for the deployment of heavy equipment and transport vehicles to strategic areas. However, personnel from H.M.S. Fife got down immediately to the task of clearing roads in Roseau to allow for movement of vehicles in the city. In the meantime helicopters from the Fife and later, the French and U.S., assisted in transporting medical and nursing personnel and relief supplies to blockaded areas during the first days following "David".

The second major task on Day 2 was locating local food supplies. This task was made more difficult because of extensive looting taking place at the time. Some food stores were located and taken over but later in the post hurricane period all food supplies arriving in Dominica were taken over by Government for relief purposes.

TASK FORCES

The third day following the hurricane saw task forces being set up to carry out surveys and ensure that basic services were functioning. The Health Sector was the first to get off the ground for general co-ordination of the health services - (treatment of injured persons, sanitary services, checking water supplies). In this respect we owe our thanks to the CARICOM Secretariat, PAHO/WHO, friendly governments and organizations (Int. Red Cross) who supplied valuable technical and professional assistance, drugs etc. The fact that no serious epidemics occurred after "David" attests to the efficiency of the Health Sector operations.

The Agricultural sector was the quickest to recover and marshal its manpower resources as those were locally available. The then Minister of Agriculture was a dynamic force in leading this recovery. Agricultural surveys etc. were undertaken and within a few days the Department was able to submit a comprehensive Emergency Food Production Plan aimed at supplying short-term agricultural produce after a six month period.

DISASTER ASSISTANCE

Overseas disaster assistance personnel started to arrive in large numbers by the fourth day and this continued for the following two weeks. This large influx of persons added to the general confusion because of the lack of accommodation, shortage of food and water and lack of essential services. As there was not yet at the time a central structure set up to handle this situation, chaos ensued and members of some of those organizations got lost in the confusion. It must be recorded also that local personnel were not generally and freely available as they had to take care of their own personal problems. The impression created was that even the trained disaster assistance personnel were at first as confused as Dominicans as they had not previously encountered devastation of such a magnitude.

To add to the general confusion of the early post David days there was also a great influx of tourist type visitors and other freebooters, including confidence tricksters, who occupied too much of the little hotel accommodation available.

While a lot of attention was being paid to other aspects of relief, the organization for receiving critical supplies (drugs, food etc.) was not functioning satisfactorily mainly because of lack of experience in these matters of the personnel involved. As a result of this setback some early relief supplies did not reach the target population.

One of the main criticisms of the organization at the Emergency Operations Centre was that specialized personnel were allocated trivial jobs which could be performed by non specialists--a great waste of talents.

A criticism of relief organizations and overseas groups is that too much used clothing was sent in, taking up valuable storage space.

LESSON LEARNED

One of the most urgent considerations for Dominica must be the need to carry out a survey of the designated emergency shelters with a view to updating and/or replacing the weaker structures. There is also the need to institute a building code to include safety standards for construction. All emergency shelters should be equipped with a good water supply, preferably with an independent cistern, a supply of food, basic emergency drugs, first aid and fuel supplies and radio telephone link with the emergency operations centre prior to and throughout the hurricane season.

Another obvious priority is a good radio telecommunications network with the main station based at Emergency Headquarters and linked not only with emergency shelters in population centres throughout the island but also to a regional network for ensuring constant contact and up-to-date information on disasters, for improving early warning systems and disseminating information to the general public. At the 19th Meeting of the Caribbean Meteorological Council held in Castries, St. Lucia, on 13th December, 1979, delegates emphasized the need for longer advance warning of hurricanes--at least 40 hours. It is hoped that Governments in the region will improve the meteorological systems to meet this criterion.

I have already indicated that an amateur radio operator was the first person to bring our plight to the attention of the outside world. Governments should give every encouragement and assistance possible to amateur radio clubs/organizations and seek to heighten their awareness of the important role they can play in disaster preparedness and relief operations throughout the region.

Prior to the hurricane season and certainly as soon as hurricane warnings are given, heavy equipment, transport vehicles and fuel supplies should be deployed to strategic areas in the country so that the clearing of roads, landslides, etc. can be effected speedily to allow for quick movement of injured persons and relief supplies.

In areas which have escaped natural disasters for long periods people tend to be lackadaisical about advance warnings. This was the situation in Dominica when hurricane "David" struck. Public awareness of possible disasters should be maintained, disaster preparedness education should be continuous and should be the responsibility of Government. Annual disaster drills can go a long way towards lessening the panic which is likely to be caused when disaster strikes.

No programme of disaster preparedness would be complete without adequate training. Medical and nursing personnel, first aid, engineering, logistics experts etc., must receive adequate training in such matters so that they may be able to deal adequately with disaster relief efforts.

One of the aspects given very little attention when disaster strikes is the area of security. The widespread looting which occurred following hurricane "David" points to the necessity of assuring that this critical area must be adequately and efficiently manned to protect relief supplies and private and public property against undue wastage and vandalism.

It is said that experience is the best teacher. Even as we hope never again for a repeat performance, let us hope that the lessons we have been taught by hurricanes "David" and "Frederic" will not have been lost upon us.

Caribbean Disaster Preparedness: A Summary

This review of disaster preparedness in the Caribbean is based on planning group discussions, team reports and related special reports on health and meteorology. In order to provide continuity for the project development effort, the data has been organized according to the project areas chosen for committee consideration.* Some sections of this review are more complete than others, because the information base was more complete for given subject areas in some countries than others. (For example, Dr. Volvick Joseph's special report on health addressed the Cayman Islands, Grand Turk, Haiti and the Dominican Republic.) References made to specific countries ought not to be taken as criticisms or endorsements of a particular country's endeavors. Rather, these examples should be viewed as illustrative of the general level of Caribbean disaster preparedness.

- * I. Communications
- II. Meteorology
- III. Preparedness Planning
- IV. EOC Management
- V. Public Awareness
- VI. Seismology (Earthquakes, Volcanoes; Disaster-Resistant Housing)
- VII. Disaster Medical Care
- VIII. First Aid Training
- IX. Non-governmental Organization Disaster Preparedness Activity
- X. Other Regional Activities
- XI. Special Country Projects

1. Communications

Kenrick Leslie's special report on the level of preparedness of meteorological services in the Central and Western Caribbean provided detailed information on communication facilities in this geographic area.¹ Belize, the Bahamas and the Dominican Republic have the capability to adequately warn most of their people.² In the Dominican Republic, emergency communications coverage was good in the capital, less effective in the countryside. Volag programs are directed at the rural population (which is not covered by commercial radio). However, the report suggested that certain links within country communications networks were potential problems. For example, in the Bahamas, though the reliability of the communications linkage between the Central Forecasting Centre in Nassau and the Regional Hurricane Center in Miami is reportedly good, the national telephone system, which functions as a link between the Central Forecasting Center in Nassau and the other islands, could become saturated when information is most needed. An independent system would be more suitable for this warning function. However, existing linkages between the country's several independent systems are not well-defined. In Belize, the link between the Forecasting Office and the countrywide network of observing stations did not prove reliable in the last hurricane emergency, though connections between the office and the radio station were.

Although Haiti and the Cayman Islands lack their own detection and tracking systems (see Meteorology), they have established links with other offices with such facilities, and are thus able to receive warnings (from the U.S. National Weather Service and Jamaica's National Meteorological Office).

In Haiti, low radio ownership limits the effectiveness of any public information network.

The Turks and Caicos Islands have neither a national meteorological service nor an established association with an external meteorological organization. The U.S. Navy and Air Force facility, closing in 1980, formerly was a potential source of warnings. The new radio station does not reach all islands.

With regard to the Eastern Caribbean (Antigua, Barbados, Dominica, Grenada, Montserrat, St. Kitts, St. Lucia and Trinidad), the team recommended an immediate evaluation of the communications systems. Barbadian officials were particularly concerned about upgrading their already good communications network. Although Montserrat has communications links with police stations on the island, they are presently not in working order. The St. Kitts emergency communications system includes connections to some police stations outside of Basseterre, Nevis, but not to Anguilla or to hospital and fire installations. In both Grenada and Dominica, no network was in existence.

From this brief review of emergency communications preparedness, it is clear that even the best-equipped islands would benefit from certain improvements. Some countries might require the installation of a complete communications system.

- 1) Belize, Bahamas, the Caymans , Dominican Republic, Haiti, Turks and Caicos
- 2) though commercial radio systems do not cover entire territory

II. Meteorology

Again, Leslie's report on the level of preparedness of meteorological services in the Central and Western Caribbean is the source of most of the information that follows. Team reports also covered this aspect of disaster preparedness.

The existing network of observing stations in Belize is sufficient for the present needs of the country. The routine operations of the Forecasting Centre provide enough information to detect and track storms occurring within the Caribbean Basin. In the Bahamas, although the present meteorological network appears adequate, disaster readiness in the outer islands could be improved by installing automatic stations to monitor the state of the sea. The Dominican Republic's meteorological facilities also met country needs; however, flood forecasting capability would benefit from direct communication between the Meteorological and Hydrological Services. Haiti, the Caymans, and the Turks and Caicos Islands do not have meteorological services with detecting and tracking facilities, although Haiti and the Caymans have formed associations with other offices offering such services.

The team reports for the Eastern Caribbean do not cover the meteorological sector in enough detail to indicate the level of preparedness in individual countries. However, the information contained in the Central and Western Caribbean Report suggests a need for improvements in and in some cases establishment of meteorological networks. Hydrological considerations also need to be integrated into these networks in areas vulnerable to flooding (Dominican Republic, Jamaica, Haiti, Barbados, most of the Lesser Antilles).

III. Preparedness Planning

The state of the country's disaster plan was viewed as an indicator of the state of preparedness in individual Caribbean countries. Most Caribbean countries have disaster plans; however, they generally address only one type of disaster, hurricanes. Only the Dominican Republic, Barbados and Grenada have plans which consider other disaster types.

In the survey of the northern Caribbean countries, another problem surfaced. While most of the governments visited indicated that national plans existed, the team members were only able to obtain a copy of the Belize plan. Where no published plans could be located, the team concluded that problems may well exist in the implementation of the plan.

The teams also observed that several of the plans were not up to date. Neither St. Kitts nor St. Lucia had revised their plans recently, though revisions were planned.

It was noted by the Eastern Caribbean Team members that several plans were oriented primarily toward relief. Greater emphasis on disaster preparedness is needed.

IV. EOC Management

(For analyses of specific components of an EOC, i.e., communications, health services, emergency supplies, etc., see appropriate sections).

Emergency Operations Centers exist in the majority of the Caribbean Islands. In some cases, as in the Cayman Islands, police headquarters are designated as the EOC and there is no permanent organization with a full-time staff. In most countries, the EOC staff performs disaster-related duties only during emergency situations. Procedures for activating the EOC when a disaster threatens are not always clear - the Bahamas appears to be a case in point.

The Eastern Caribbean Team commented on the structural soundness of EOC buildings. In Antigua, Montserrat and Dominica, the EOC's structural resistance to hurricanes or earthquakes was questioned.

Finally, a limited evaluation of the adequacy of personnel training was performed. Most islands would benefit from improved programs; several governments identified personnel training as a high-priority need.

V. Public Awareness

Team comments on public awareness should be taken in the context of limited opportunity for observation and discussion during their visits. Increased public awareness is a high priority need for many of the Caribbean governments contacted. To a certain extent, public awareness is dependent on the status of the various communications networks (see Communications) and, in practice, on the recent occurrence of disasters.

In Belize, the National Meteorological Service directs a year-round public education campaign. Schools, government agencies, and private businesses participate with lectures, exhibitions, movies, newspaper articles, posters, pamphlets and even open-house days at radar stations. In the Bahamas, there is a more limited effort, primarily in collaboration with radio and T.V. stations during the hurricane season.

With regard to the Eastern Caribbean, the team recommended several public awareness projects, perhaps influenced by the lack of preparedness for hurricane David. Since the 1970's were relatively disaster-free, public awareness is not at the optimum level for adequate disaster preparedness in these countries. For example, a National Disaster Day was suggested for St. Lucia, and radio broadcasts of public awareness programs were proposed for Dominica.

VI. Seismology (Earthquakes, Volcanoes)

Neither team focussed explicitly on seismology. Because most plans do not address seismic threat and because the interval between earthquakes and volcanic eruptions is far greater than that for tropical cyclones or floods, it is probable that the level of preparedness is very low in this area. Barbados, Grenada, and St. Kitts cited U.W.I. as a source of seismic risk evaluation and monitoring; St. Lucia and Antigua referred these roles to unspecified regional organizations.

VII. Disaster Medical Care

A special report on Health for the Cayman Islands, Grand Turk, Haiti and the Dominican Republic contains some valuable insights into the level of emergency medical care. Both teams also reviewed the health situation as part of their assessments.

Few countries have separate disaster plans in the health sector or for hospital facilities. The Dominican Republic, Cayman Islands, Grand Turk, and Haiti were deficient in this respect. Both the Dominican Republic and Grand Turk had a checklist for action to be taken and resources to be made available at health centers or an easily located central point.

Although Antigua did have a hospital disaster plan, emergency supplies were limited. Likewise, St. Kitts and the Cayman Islands do not maintain adequate emergency medical supplies.

In the Cayman Islands and Grand Turk, Haiti, and the Dominican Republic, emergency room equipment is insufficient and ambulance services would not meet the demand in an emergency. Also emergency training for medical personnel in these countries is lacking.

These observations suggest that while the basic institutional framework exists for emergency medical care, it is necessary to augment medical resources and train medical personnel for emergency situations.

VIII. First Aid Training

First aid training was available in about half of the countries surveyed. Refresher courses were suggested.

IX. Non-Governmental Organization Activities

NGO's, voluntary agencies and service organizations play an active role in the disaster relief activities of most Caribbean countries. The Red Cross, the St. John's Ambulance Service (in English-speaking areas), various church groups and international voluntary agencies may provide planning expertise, operations staff and relief supplies and services and are often integrated into country plans. Projects should make the best possible use of trained or experienced personnel; training projects for NGO's were suggested by both teams and countries.

X. Other Regional Activities

Possibilities for participation in or use of existing regional programs have not always been fully investigated by individual countries. Most Caribbean countries do not have the resources on a national level for extensive mitigation and prevention programs in the areas of risk mapping and zoning, building standards development and hazard monitoring. Regional organizations, e.g. U.W.I., in some cases already have programs which could be extended to include vulnerable areas not already covered.

XI. Special Country Projects

Special conditions, in the physical environment, for example, may create unique disaster preparedness needs in some countries. It may be advantageous to discuss project possibilities for such situations in the regional forum this conference provides.

IN-COUNTRY SELF-AUDITS

DISASTER PLAN

Island Name	up to date	for all disasters	only for hurricanes	emer. op. center	district organ.	periodic updating	periodic testing	warnings/ advisories	search & rescue	areas for improvement/comment
A	yes	no	yes	yes	yes+	yes (annual)	no	yes	no	plan/central emergency org. In developmental stage
B		yes	no	yes	yes	no	no	yes	no	urgent need to implement national emergency plan
C	yes	no	no	no	no	yes	no	yes	no	
D	yes	no	yes	yes	yes	yes	no	yes	no	need equipment, training, and testing
E	no	no	yes	no	no+	no	no	yes	no	plan being redrafted; no copy available
F	no	no	yes	yes	yes	no	no	yes	no	1974 plan under revision
G	yes	no	yes	no+	no	yes	no	yes	no	Ministry, Hospital and Airport plans
H	no	no	yes	no	yes	yes	yes	yes	yes	Cabinet Office coordinates; specialized public and private sector plans
I	yes	yes	no	yes	yes	yes (annual)	yes (annual)	yes	yes	
J	yes	no	yes	yes	yes	yes	yes	yes	yes	plans tested and in use on all levels
K	yes	yes	yes	yes	yes	yes	yes	yes	yes	public and private sector plans

+ but police headquarters is designated emergency operations center

DISASTER PREPAREDNESS

Island Name	organization	full-time	part-time	voluntary	training	needs	comments
A	no	none	none	all	no	tourist evac. plan	disaster organization staffed by service club members
B	no	no	no	all	no		all medical and other relief supplies distributed by RC and Ministry of Public Health
C	no	none	two	many	no		no procedures manual for emergency operation center; no projects underway; suggestions may follow
D			local mil. & gov't	30 % of staff	not recent		chart prepared but not attached with copy of self-audit
E	no	none	none	none	no	emer.commo. network	a national disaster plan is now being formulated; may need outside assistance
F	no	none	none	none	no	training/ simulation	no plan for coordinating external assistance/funding disaster preparedness; bldg.codes/evacuation plans needed
G	no	none	none	all	no		plan needs preparedness element/extension to other disasters; resource manual and public awareness needed
H	no	none	none	none	yes		no data on organization, operations center or staffing; needs: local disaster plans & booster radio station
I	yes	two	none	district staffs	some	disaster scenarios	insufficient staff; request more written disaster scenarios; needed: resource manual, annual self-audit, seminar, surveys
J	yes	none	Civil Service	none	yes	internal commo.	planning, preparedness, training all implemented on nat'l, local and private sector levels. internal commo. survey needed
K	yes	no	Civil Service	yes as needed	yes	none at present	preparations believed adequate

DISASTER RELIEF OPERATIONS

Island Name	Immediate action	communications type	quality	needs	volags-name specialization	areas for improvement/comment
A	no experience	VHF	adequate		Red Cross, SDA, Baptist Church	Red Cross/volags volunteers at emer. op. center; preparedness plans untested; health/hosp.services inadequate; satellite station under constr.
B	yes	N/A	poor	not established	Red Cross, CARE, CARITAS	civil defense communication limited and obsolete: volags bilateral/int'l programs in national plan
C	yes	VHF	adequate		Red Cross, SA, St Johns Ambu.	Island telecomm. equipment/condition described as good; emergency supplies very limited
D	yes	VHF	inoperative		Red Cross, St Johns Ambu. CC	needs equipment; poor communications; list of needs sent
E	no experience	N/A	N/A	not established	Red Cross, St Johns Ambulance	telecomm. equip. inadequate; no links between villages/hospitals; emer. supplies storage lacking; projects: emer. communications and hospital
F	no experience	VHF UHF	fair	helicopter	Red Cross, St Johns Ambulance	no training/coordination for prepare. programs or simulation/testing exercises; commo. inadequate; needs: storage, air/sea rescue, fire boat
G	no program	VHF	limited		Red Cross, St. John's Ambulance	communications inadequate; local/regional effectiveness marginal; suggested projects: commo., first aid, air/sea rescue; helicopters needed
H		VHF	good	booster broadcast station	Red Cross, Air Sea Auxillary	disaster planning/preparedness in outlying areas
I	yes	VHF UHF	fair	update telecommunication	Red Cross: first aid, supplies	needs: first aid training/trainers, preparedness/search & rescue materials/equipment, hotel plan; priorities: telecomm. project underway
J	yes	VHF	effective	internal communications	Red Cross, Scouts Guides	Personnel Resources: Defense Force, Police, Nat'l Fire Service, Customs, P.W.D., Medical Dept. Commo: Cable & Wireless, Army Commo. Center
K	yes	UHF VHF	good		Red Cross, St. Johns Ambu. local service clubs	No recent disasters. Police coordinate operations

SA...Salvation Army
SDA..Seventh Day Adventist

CC...Christian Council

DISASTER/PREVENTION MITIGATION

Island Name	risk assessment	land use mapping	regional/intl projects	food surveillance	public health	disaster area mapping	meteorological research	"safe areas"
A	no	no	no	no	no	no	no	no
B	no	yes	no	no	yes	no	yes	yes
C	yes	no	no	no	yes	yes	yes	no
D	no	yes	no	from outside as needed	from outside	no	no	no
E	no	no	no	no	no	yes	no	no
F	no	no	no	yes	yes	yes	yes	no
G	no	no	yes	yes	yes	no	yes	no
H	no	no	no	no	yes	no	yes	no
I	yes	yes	no	yes	yes	yes	yes	no
J	for storms	no	yes	yes	yes	no	yes	yes
K	no	no	no	no	yes	no	yes	no

compiled by Tom Philipp
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