THE HURRICANE SEASON IS HERE

SURVIVING THE HURRICANE - What Damage Can You Expect?

Wind and Water. The combination can be lethal. The worst thing about a hurricane is a general rise in sea level called storm surge. It begins over the deep ocean. The low pressure and strong winds around the hurricane’s eye raise the ocean surface a foot or two higher than the surrounding ocean surface, forming a dome of water as much as 50 miles across. As the storm moves into shallow coastal waters, decreasing water depth transforms the dome into a storm surge than can rise 20 feet or more above normal sea level, and cause massive flooding and destruction along shorelines in its path. The rise may come rapidly and produce flash floods in coastal lowlands or may come in the form of giant waves - sometimes mistakenly called tidal waves.

The highest and most dangerous portion of the storm

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surge usually extends from near
the center of the hurricane some
50 miles along the coast in the
quadrant of the hurricane, where
winds are blowing toward shore.
Hurricane damage is greatest in
the north-east quadrant of the
storm.

Wind speeds vary greatly from
hurricane to hurricane and within
each storm. Wind gusts may ex-
ceed sustained winds by 25 to 50
per cent. The time between the
first rise in wind and rain squalls
and a return to moderate winds
after the storm is often about 24
hours. But this varies greatly
depending on the size of the hur-
icane, its forward speed and how
close you are to the center. That
is why the key to reducing wind
damage is reinforcing weak spots
like windows, exterior glass
doors, small trees and shrubbery.
While hurricane winds do much
damage, drowning is the greatest
cause of hurricane deaths.

As the storm moves inland
and its winds diminish, the flooding
carried by these torrential rains
then becomes the hurricane’s
greatest threat. The amount of
rainfall varies with hurricane size,
forward speed and other factors,
but there are some relatively con-
stant features. During the
“average” 24 hour period, it takes
a hurricane to pass through a
community as little as 5 to 10 in-
ches of rainfall or better than 12
to 30 inches of rainfall can occur.

To relate hurricane intensity to
damage potential, the National
Hurricane Center uses the Sta-
fir/Simpson scale which assigns
storms to five categories.
Category One is a minimum hur-
icane; Category Five is the worst
case.

CATEGORY 1 - Winds of 74.95
miles per hour. Damage primarily
to shrubbery, trees, foliage, and
unanchored mobile homes. No
real damage to other structures.
Some damage to poorly con-
structed signs. And/or: storm
surge 4 to 5 feet above normal.
Low-lying coastal roads inund-
at, minor piling damage, some
small craft in exposed anchorages torn from moorings.

CATEGORY 2 - Winds to 96 to
110 miles per hour. Considerable
damage to shrubbery and tree
foliage; some trees blown down.
Major damage to exposed mobile
homes. Extensive damage to
poorly constructed signs. Some
damage to roofing materials of
buildings; some window and door
damage. No major damage to
buildings. And/or: storm surge 6
to 8 feet above normal. Coastal
roads and low-lying escape
routes inland cut by rising water
two to four hours before arrival
of hurricane center. Considerable
damage to piers. Marinas flooded.
Small craft in unprotected
anchorages torn from moorings.
Evacuation of some shoreline
residences and low-lying island
areas required.

CATEGORY 3 - Winds of 111
to 130 miles per hour. Foliation
torn from trees; large trees blown
down. Practically all poorly con-
structed signs blown down. Some
damage to roofing materials of
buildings; some window and door
damage. Some structural damage
to small buildings. Mobile homes
destroyed. And/or: storm surge 9
to 12 feet above normal. Serious
flooding at coast and many
smaller structures near coast
destroyed; large structures near
cost damaged by battering
waves and flooding debris. Low-
lying escape routes inland cut by
rising water 3 to 5 hours before
hurricane center arrives. Flat ter-
rain 5 feet or less above sea level
flooded inland 8 miles or more.
Evacuation of low-lying residen-
ces with several blocks of
shoreline possibly required.

CATEGORY 4 - Winds 131 to
155 miles per hour. Shrubs and
trees down; all signs down. Exten-
sive damage to roofing materials,
windows and doors. Complete
failure of roofs on many small
residences. Complete destruction
of mobile homes. And/or storm
surge 13 to 18 feet above normal.
Flat terrain 10 feet or less above
sea level flooded inland as far as
6 miles. Major damage to lower
floods or structures near shore
due to flooding and battering by
waves and floating debris. Low-
lying escape routes inland cut by
rising water 3 to 5 hours before
hurricane center arrives. Major
erosion of beaches. Massive
evacuation of all residences within
500 yards of shore possibly re-
quired and of single-story residen-
ces on low ground within 2 miles
of shore.

CATEGORY 5 - Winds greater
than 155 miles per hour. Shrubs
and trees blown down; con-
siderable damage to roofs of
buildings; all signs down. Very
severe and extensive damage to
windows and doors. Complete
failure of roofs on many residen-
tces and industrial buildings. Exten-
sive shattering of glass in
windows and doors. Some complete
building failures. Small buildings
overturned or blown away. Com-
plete destruction of mobile
homes. And/or storm surge
greater than 181 feet above nor-
mal. Major damage to lower
floors of all structures less than
15 feet above sea level within 500
yards of shore. Low-lying escape
routes inland cut by rising water 3
to 5 hours before hurricane cen-
ter arrives. Massive evacuation of
residential areas on low ground
within 5 to 10 miles of shore pos-
sibly required.

Source: Co-ordinator Disaster
Programmes Office, Civil Defense
and Emergency Services Office of
the Governor, St. Thomas, USVI
00832

!!!HELP!!!

The ODP is trying to compile a
list of Research Projects on Dis-
aster Related subjects. Please
help by sending information on
the topic of Research Project, the
persons and institutions involved,
publications associated with the
research to:
The PCDPPP
P.O. Box 1399
St. John’s
ANTIGUA
or
Dr. David Barker
Geography Dept.
UWI, MONA - JAMAICA
EDITORIAL

ENGLISH

As people in the Caribbean Region prepare themselves for what weather forecasters predict will be "an active hurricane season" we have decided to devote this issue to Hurricanes.

The official Hurricane Season extends from June 1st to November 30th, and we have to bear in mind that we do not yet have all the answers nor the funds to cope with the destruction which hurricanes usually wrought. However, the Region is busy preparing for whatever storm the 1987 season may bring; in cooperation with the Antigua-based Pan-Caribbean Disaster Preparedness and Prevention Project (PCDPPP). This organization has been co-ordinating training programmes, providing equipment, and monitoring the capabilities of national disaster organizations in the region as well as governments' responses to recommendations for effective disaster management. In this issue, as well as ensuing issues, we'll be doing in-depth interviews with Regional National Disaster Coordinators who have embarked upon awareness programmes to sensitize the public about disaster preparedness.

THINK WE'RE SAFE FROM A HURRICANE? BETTER THINK AGAIN, OUR LUCK COULD RUN OUT!

With the official start of the 1987 Hurricane Season here in the Caribbean Region, very few of us will actually start preparing for the hurricane season by stocking up on flashlights, candles, canned food, water and medicine. Every year, we worry a little less as we hear the same story: This could be the year of the big one! Because of our apathy, some of us will die. Some, the lucky survivors, will be hungry and ill during the long days and nights of cleaning up. After all, it has been a while since the Caribbean has really been struck by a devastating hurricane. Meteorology is too imprecise a science to accurately predict if 1987 will be the year of total destruction and devastation for the Caribbean Region.

Today, while the paths of hurricanes are easy to detect, they are almost impossible to predict. With the assistance of satellites and reconnaissance planes, forecasters can precisely determine the position of a storm; but not where it goes next. In twenty-four hours, a storm can switch directions without prior warning.

Over the past years, those of us who took time to be prepared, will put back our candles and flashlights in storage; and will start using the stored canned foods and water. Those of us who never prepared will continue to go about our business as usual. However, this year, here in the Caribbean our luck could run out. Will it happen this year? Who knows? Be Prepared! Don't say you weren't forewarned. BEWARE!!! This could be THE YEAR!!!!!
Caribbean National Coordinators Meeting No. IV

The fourth meeting of the National Disaster Coordinators of the Caribbean, was held in Kingston, Jamaica on May 1-2, 1987. This meeting was held immediately following an intensive four-day Training Programme for the Coordinators. Seventeen of the twenty-eight countries participating in the project attended, representing the following countries: Anguilla, Antigua, Barbados, Belize, the British Virgin Islands, the Cayman Islands, Cuba, Grenada, Haiti, Jamaica, Montserrat, the Netherlands Antilles - Curacao, St. Eustatius and St. Maarten; St. Lucia, St. Vincent and the Grenadines and the Turks and Caicos Islands. Also present at the meeting were representatives from the Caribbean Community Secretariat (CARICOM), the United Nations Disaster Relief Office (UNDRO), Geneva and New York, the Canadian International Development Agency (CIDA), the Office of Foreign Disaster Assistance (OFDA/USAID), the Pan-American Health Organisation (PAHO/WHO), the League of Red Cross and Red Crescent Societies (LRCS) and the Project Manager and Staff of the PCDPPP.

Discussions were held on Disaster Management in the Region, Programmes and Priorities for the Project (PCDPPP) for 1987 - 1988 and the future Administration and Implementation of the PCDPPP. The main priorities for 1987 were identified as:

- the development of formalized linkages between the PCDPPP and regional institutions;
- the development of public awareness programmes to improve the visibility of disaster management activities by the project in the region.

The revised work plan presented at the meeting, was accepted as the plan for 1987. National Coordinators could make adjustments to the plan as deemed necessary.

A commitment by CIDA to continue supporting the project financially in 1987, was again reiterated at the meeting. However, certain factors needed to be outlined before the money become available.

Both PAHO and LRCS pledged their continued support to the project with the provision of staff members.

OFDA stated their intention to assist in the region and to continue considering funding requests on an individual case by case basis. Areas of priority being, training in disaster management, damage assessment and emergency medical services.

Among other matters discussed were the criteria for the selection of a permanent Project Manager and a Permanent Disaster Management Mechanism for the Region. The coordinators agreed that there was a support for continued regional collaboration and the possible development of a regionally financed coordinating body of activities to prevent unnecessary duplication. It was also agreed that such a body be in place by 1990 and that the period preceding this date be used to improve national capabilities.

French

La quatrième réunion des coordinateurs du désastre national des Antilles avait lieu à Kingston, Jamaïque du premier au deuxième mai, 1987. Cette réunion avait lieu immédiatement après un programme d'instruction intensive qui a duré quatre jours pour les coordinateurs. Dix-sept pays qui ont participé au projet ont assisté; ils ont représenté les pays suivants: Anguilla, Antigua, Barbados, Belize, les British Virgin Islands, les Cayman Islands, Cuba, Grenada, Haïti, Jamaïque, Montserrat, les Pays-Bas - Curacao, St. Eustatius et St. Maarten, St. Lucia, St. Vincent et les Grenadines et les Turks et Caicos Islands. À la réunion aussi il y avait les représentants de CARICOM, de UNDRO, Genève et New York, de CIDA, de OFDA/USAID, de PAHO/WHO, de LRCS et le directeur du projet et le personnel de PCDPPP.

Les discussions avaient lieu au sujet de la direction d'un désastre dans la région, les programmes et les priorités pour le projet (PCDPPP) pour l'an 1987 - 1988 et l'administration et l'exécution futures de PCDPPP.

Les priorités principales pour 1987 étaient identifiées comme:

- Le développement des liasons formalisées entre PCDPPP et les institutions régionales;
- Le développement des programmes de la conscience publique pour améliorer la visibilité des activités de la direction d'un désastre par le project dans la région;
- Le plan de travail révisé qu'on avait présenté à la réunion était accepté comme le plan pour 1987. Les coordinateurs nationaux peuvent faire des ajustements au plan s'il le faut.

Un engagement par CIDA à continuer à soutenir le projet financièrement pendant 1987, était réitéré de nouveau à la réunion. Cependant, on a besoin d'indiquer certains facteurs avant de faire disponible l'argent.

Et PAHO et LRCS se sont engagés à faire leur appui soutenu au projet avec la provision du personnel.

OFDA a déclaré son intention de prêter son assistance dans la région et de continuer à considérer les demandes de la consolidation sur une base individuelle et par cas. Les secrétaires du projet sont l'instruction de la direction d'un désastre, l'évaluation des dégâts et les services médicaux en cas d'urgence.

Entre les autres affaires en discussion il y avait les critères pour
le choix du directeur permanent du projet et un mécanisme pour la direction permanente d'un désastre pour la région. Les coordonnateurs se sont accordés qu'il y avait de l'appui pour la collaboration régionale et continue et le développement possible d'une corporation coordinateur qui est financée dans la région pour servir de point focal, un dépôt pour l'information, et la coordination des activités pour empêcher la répétition inutile. Tout le monde accepté qu'une telle corporation doit être en place par l'an 1990 et que la période qui précède cette date employée pour améliorer les capacités nationales.

Spanish

La cuarta reunión de los coordinadores del desastre nacional de las Antillas tenía lugar en Kingston, Jamaica del 1 al 4 de mayo de 1987. Esta reunión tenía lugar inmediatamente después de un programa de cuatro días para los coordinadores. Diez y siete de los veinte y ocho países que han participado en el proyecto han asistido; los representantes de los países siguientes Anguilla, Antigua, Barbados, Barbados, British Virgin Islands, the Cayman Islands, Cuba, Grenada, Haiti, Jamaica, Montserrat, the Netherland Antilles - Curacao, St. Eustatius y St. Maarten; St. Lucia, St. Vincent y las Grenadines y los Turks and Caicos Islands. A la reunión también habían delegados de CARICOM, de UNDRO, de Geneve y New York, de CIDA, de OFDA/USAID, de PAHO/WHO, de LRCS y el director del proyecto y el personal de PCPPPP.

Discusiones tenían lugar, sobre la dirección de un desastre en la región, programas y prioridades para el proyecto (PCPPPP) para el año 1987 - 1988 y la administración y la ejecución futuras de PCPPPP.

Las prioridades principales para 1987 fueron identificadas como:

- El desarrollo de los vínculos formalizados entre el PCPPPP y las instituciones regionales.
- El desarrollo de programas de la conciencia pública para mejorar la visibilidad de las actividades de la dirección de un desastre por el proyecto en la región.
- El plan de trabajo revisado que fue presentado a la reunión fue aceptado como el plan para 1987. Los coordinadores nacionales podían hacer ajustes al plan si fuera necesario.

Una obligación por CIDA a continuar a sostener el proyecto financieramente durante 1987, fue reiterado de nuevo a la reunión. Sin embargo, se tiene que perfilar ciertos factores antes de hacer disponible el dinero.

Ambos PAHO y LRCS han prometido su soporte continuo al proyecto con la provisión de personal.

LIST OF ACRONYMS

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CANA</td>
<td>Caribbean News Agency</td>
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<tr>
<td>CARICOM</td>
<td>Caribbean Community Secretariat</td>
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<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<td>LRCS</td>
<td>League of Red Cross &amp; Red Crescent Societies</td>
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<tr>
<td>NERO</td>
<td>National Emergency Relief Organization (Trinidad &amp; Tobago)</td>
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<tr>
<td>OAS</td>
<td>Organization of American States</td>
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<tr>
<td>ODIPERC</td>
<td>Office of Disaster Preparedness &amp; Emergency Relief Co-ordination (Jamaica)</td>
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<td>OECS</td>
<td>Organization of Eastern Caribbean States</td>
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<tr>
<td>OFDA/USAID</td>
<td>Office of Foreign Disaster Assistance/United States Agency for International Development</td>
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<td>PAHO/WHO</td>
<td>Pan-American Health Organization/World Health Organization</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNDRO</td>
<td>Office of the United Nations Disaster Relief Co-ordinator</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>UWI</td>
<td>University of the West Indies</td>
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An Interview with
Jerome Lloyd, National Disaster Co-ordinator,
Dominica

Q. What prompted the development of Disaster Management in Dominica?

A. Disaster Management developed in Dominica as a result of the Hurricane David experiences in August 1979. I was responsible for all Relief Assistance, except Finance, which came into the country. When the present Government came into power in 1980, because of the Prime Minister’s experiences in her community, she decided that some organization had to be in place to take care of Disaster Management in Dominica. In May 1981, I attended a Caribbean Disaster Preparedness Project Conference in the Dominican Republic where the Pan-Caribbean Disaster Preparedness and Prevention Project (PCDPPP) was born. At this conference, I submitted two projects from Dominica - one which dealt with Emergency Telecommunications Network and another with Disaster Public Awareness. I then attended a training workshop in May 1981 in Canada, and this entailed training in emergency management. On my return, I was appointed a full time National Disaster Coordinator in Dominica.

Q. With the onset of the hurricane season, what are the plans for your office?

A. Emphasis on public awareness is focused on throughout the year. The office is involved in all kinds of activities, especially precautionary measures during the hurricane season. At the local level, throughout the villages, there are many disaster preparedness committees; and on a higher scale, there is a system of district emergency organizations throughout the island. These district committees are under the Community Development Ministry which is responsible to the Local Government Department. Disaster Preparedness is viewed as community development, people are very much involved throughout the villages. Training workshops are planned for this season, especially for the training of shelter managers. These shelter managers’ duties are to assess, organize and operate emergency shelters in times of disaster, and to assist them to become acquainted with job responsibilities.

Q. What is the specific role of your office in Dominica?

A. The role of my office is to deal with Disaster Preparedness and Disaster Management in an attempt to save lives, prevent injury and to protect property in the event of a disaster or emergency. There are certain functions like informing the public of the nature of a disaster; what should be done to cope with disasters should they occur; operate a warning system to warn what measures should be taken before, during and after disasters. We are also involved in the planning, programming and provision of resources like catering for the extra-ordinary resources needed for disasters. We are also constantly evaluating the entire system for the improvement of the organization. Our Disaster Management activities involve not only public servants and entire communities, but also the private sector, non-governmental organizations and every individual in the country.

Q. How would you assess the future of Disaster Management in the region?

A. The prognosis is good, but I think success is contingent on all participating countries making a definite commitment to whatever regional disaster management organization exists. Not only lip service must be paid, but support with financial contributions to the organization and also support and encouragement must be given to their own local disaster management organization. Motivation of the public must be done on a constant basis. In this respect, maybe an improvement in the attitudes of some of our elected officials. If they think and act as if emergency management is an important area, this can assist tremendously in changing the attitudes of the public towards disaster management. After all the recent experiences with disaster the world over, we should, by now, have stopped thinking of disaster management or disaster preparedness solely in terms of preparing for a possible hurricane every year.

Q. In view of your retirement at the end of the year, what are your future plans and what advice would you give to other National Disaster Coordinators in the Caribbean Region?

A. I think the National Disaster Coordinators need a word of encouragement, because their jobs can be frustrating. We, as emergency managers, recognize the importance of the work we are doing in disaster management in the region. Whatever happens, we should not give up the fight, but stick steadfastly with it. We should be cognizant of the fact that there are other disasters to which we are prone besides hurricanes. Other efforts should also be aimed at preparing our populations to deal with those disasters other than hurricanes. I am retiring at the end of the year from Public Service as National Disaster Coordinator for Dominica. However, I am remaining in Dominica and I am truly dedicated to Emergency Management and my services will be made available to the region.

EDITOR’S NOTE: We in the Caribbean Region, would like to wish Mr. Lloyd, the best of luck for the future.
Report on the PCDPPP Regional Disaster Co-ordinators Training Seminar held in Jamaica
April 27 - 30, 1987

The beautiful and spacious Oceana Hotel, downtown Kingston, was the venue for the Pan-Caribbean Disaster Preparedness and Prevention Project's (PCDPPP) Regional Disaster Coordinators' Training Seminar, which lasted from April 27 - 30. The Office of Disaster Preparedness and Emergency Relief Coordination (ODIPER) of Jamaica, under the capable management of its Director, Mr. Franklyn McDonald, and staff, hosted some 30 delegates who had come from 13 member territories of the PCDPPP to attend this training seminar. The overall objective was the improvement of Disaster Management skills of persons responsible for National Disaster Coordination in the Caribbean area, with a view to facilitate and accelerate development of appropriate disaster management capabilities of the countries of the region.

The first day of the Seminar focused on Hazards in the Caribbean and the Impact Which Disasters Can Have on Regional Economies. Mr. McDonald who presented a paper on this subject, focused more on the damage which was often done by the side effects of disasters. Mr. McDonald stated that these effects, though they account invariably for most deaths in disasters, very often did not get enough attention from relief workers. He cited such side effects as ash clouds, interference with air lique sights, post-hurricane injuries and childbirth acceleration due to stress.

This session was followed by a slide Hurricane Simulation which was presented by resource person, Frederick Cuny of INTERTEC, with the assistance of Harold Schmucker. Day 1 ended with group work pertaining to the Hurricane Simulation followed by a debriefing session.

The theme of the next day's work session was National Disaster Plans and Programmes. Participants were given guidance in the Preparation of National Disaster Plans, and were instructed on the concepts of Emergency Management, Emergency Shelter and Evacuation Systems and Shelter Assessment Procedures. One of the resource persons for this session was Lt. Commander John McFarlane of ODIPER Jamaica. The day's activities ended with a presentation on Post-Disaster Coordination.

Day three had as its theme "Mitigation Opportunities". Harold Schmucker presented a detailed analysis for the development of sectoral programmes for Housing, Agricultural and Commercial interests. Schmucker outlined the elements of a typical mitigation plan which encompassed statements of Policy and Objectives, Task Assignments, Identification of Priority Areas and Operational Plans with checklists, and Task Sequences in Relation to Public Awareness, Resource Allocation, Incentives, Financial Assistance and Insurance.

This period was followed by a post-lunch session on the Development of Funding Proposal with Dr. Denise Decker, Training Consultant with OFDA/USAID, and one of the resource persons at the Seminar. Dr. Decker informed participants that USAID offered assistance with disaster relief when the US Ambassador had notified them (USAID) of the declaration of a disaster in a country, and the country was unable to handle the disaster independently. She further stated that only immediate disaster needs, preparedness and training, qualified for funding from USAID. All other requests for major aid funding would be directed through OFDA from countries to USAID.

Great emphasis was placed on Session 4 of Day Three. This session was chaired by Miss Audrey Mullings and was devoted to the development of Non-Government Linkages and Programmes, viz, the Red Cross, Salvation Army, Partners of the Americas, and the Amateur Radio Societies. Representatives of these bodies presented short papers and entertained questions about their organizations.

Miss Audrey Mullings of Red Cross Societies, explained the structure of the Red Cross and gave a brief history of the movement. She ended by stating that the National Red Cross Societies have a constitutional obligation to provide disaster services. In explaining the role of the LRCS Component of PCDPPP, Miss Mullings stated that the main objectives were, the improvement of the Disaster Operational Capacity of Red Cross Societies in the Region, the implementation of the First Aid Programme and assistance in collaboration with other agencies. Mrs. Eleanor Jones of the Partners of the Americas stated that the prime role of the Partners system was the establishment of competency among communities in the United States of America to respond to the needs of other countries. Other valuable contributions came from Col. C. Burrowes of the Salvation Army and Dr. Munroe of the Amateur Radio Association of Jamaica.

The day's activities ended with a field trip organized for participants by ODIPER. The objective of this trip was the inspection of sites vulnerable to flooding and erosion. The inclusion of this trip was pertinent, since the severity of flood waters in Jamaica at that time resulted in loss of lives and millions of dollars in damage.

The final Training Day of the Training Seminar emphasized the Development of Disaster Skills and the Preparation and Implementation of Project Proposals. The major resource person was Dr. Decker. Participants were painstakingly taken through the stages of proper iden-
tification of training needs and the proper methods for requesting assistance with training. Dr. Decker also outlined the training policies of OFDA and echoed Fred Cuny's earlier words of advice to delegates that aid donors were placing emphasis on assistance to countries which had effective in-country self-help programmes. Guidelines for proposal development, and details on what aid donors expected in a project proposal submission were given.

The United Nations Environmental Programme (UNEP) and the United Nations Development Programme (UNDP), through their respective representatives Ms. Beverly Miller and Mr. Hugh Cholmondeley briefed delegates on International Sources of Programme Support. Other UN Agencies such as UNESCO, UNICEF, FAO and WMO were cited as having positive disaster relief programmes which could facilitate requests from countries. Bilateral organizations such as CIDA, EEC and the IBRD were also mentioned.

The Seminar was notified that 1990 - 2000 was designated, the International Decade for Hazard Reduction, and that countries should attempt to upgrade their level of preparedness to fall in line with international plans for the Decade.

The final session of the Seminar dealt with the all-important subject of Public Awareness in Disaster Management, and was chaired by Miss Judy Thomas, of CERG, Barbados. This session, though not detailed, highlighted the many ways in which public awareness could be heightened so that information could reach the public in a more meaningful way. Use of the media, libraries, citizens' bands, village forums, exhibitions and posters were widely accepted as being top priority. The incorporation of preparedness in the schools' system and the offering of programmes on radio to specific audiences were thought good strategies for a sound effective public awareness programme. Guest speaker at this session was Mrs. Lorna Gordon-Grafton, Communications Consultant, ODIPERC of Jamaica.

The general view of delegates attending the seminar seemed to have been that there was much to be offered, and in fact, much was learnt from the papers presented and the guest speakers. A major novelty of the programme was the training in the Preparation and Implementation of Project Proposals. Participants came away with clear insights into what constituted a reasonable Project Budget, Consistency of Project with stated policies, adequate Monitoring of Project, Environmental Impact, and such terms which are relevant to effective project proposal submission.

In addition to the overall objective of the Seminar, the specific objective, which was seen as that of ensuring that participants were aware of the range of disaster threats to the Caribbean and the vulnerability of members states to these threats, was achieved. Countries were now even more aware that proper knowledge in the concepts, theories and practices of disaster management, the exchange of information on regional and international resources, and well-formulated and tested national disaster plans, all went a long way in developing regional emergency management capabilities. On behalf of the participating countries, I say congratulations on a job well done to the PCDPPP, the sponsors, the ODP - organisers of the Training Seminar. I also acknowledge on the participants' behalf, OFDA for its support, and especially for resource person, Dr. Denise Decker. Special mention is made of Mr. Frederick Cuny, Head of the International Disaster Consulting firm, INTERTECT, the main resource person.

Participants came from Anguilla, Antigua, Barbados, Belize, British Virgin Islands, Cayman Islands, Grenada, Montserrat, Netherlands Antilles (Curacao, St. Maarten, St. Eustatius), St. Lucia, St. Vincent and the Turks and Caicos Islands and the host country Jamaica.

A REVIEW OF THE 1986 HURRICANE SEASON

In a review of the past 1986 Hurricane Season, it seems appropriate to remind the public that the official Hurricane Season for the Caribbean usually begins from June 1st and ends on November 30th.

During 1986, there were two tropical storms and four hurricanes. This is four less than the long-term average of four storms and six hurricanes. Therefore, it will readily be seen why the past season was classified as a relatively inactive one. With the Caribbean Region in mind, the season will be recorded as another very quiet one, continuing the trend which has been established over the past six years.

The following are the storms and hurricanes which occurred during the season:

a) Tropical Storm "Andrew" This storm reached a maximum wind speed of 50 m.p.h., remained off-shore and was responsible for one death in Jamaica.

b) Tropical Storm "Danielle" With maximum winds of 60 m.p.h., it moved across the Windward Islands and into the Caribbean Sea. It was responsible for two casualties including one death due to a landslide and damage worth US$8.5 million in St. Lucia. In St. Lucia, heavy and sustained rainfall resulted in widespread damage to the island's road infrastructure, significant land slippages and flooding of rural farm lands. The total effect was the loss of valuable agricultural crops and inputs. In Barbados, damage was slight with reports of ten houses
damaged and one destroyed. The overall damage was $30,000.

c) Hurricane "Bonnie": No damage was done in the Caribbean.

d) Hurricane "Charlie": No damage was done again in the Caribbean Region.

e) Hurricane "Eart": This hurricane's wind speed was the highest for the season. No damage done.

f) Hurricane "Frances": This hurricane did no damage here in the Caribbean.

It should be noted that the occurrence of abnormal rainfall took place during the season. Heavy rains and landslides were experienced in Dominica, where minor damage to the Banana Industry (US$250,000) resulted. In Barbados, there were very heavy rains resulting in extensive flooding and major damage to roads.

Statistical odds favour a more active season this year than was the case last year. The predictors which are currently used for seasonal prediction indicate that the 1987 season is likely to have an average amount of hurricane activity.

As we move into the new season, let us not become complacent as a result of the protracted period of relative "calm". Continue to maintain that alertness and that level of preparedness which will prompt positive action when this becomes necessary. Therefore, please pay close attention to any official weather systems, news releases that may be issued via the various news media.

NEWS OF INTEREST FROM PCDPPP

NEW CHAIRMAN FOR MONTSERRAT

Montserrat's National Disaster Advisory Council has a new Chairman. He is Governor Christopher John Turner, who has just taken up his appointment in Montserrat.

Governor Turner brings a wealth of experience in disaster preparedness with him, having serving in the Fiji Islands and the Turks and Caicos Islands which were severely battered by hurricanes.

So far Governor Turner has met with other members of the Council, and members of the various district disaster committees on the Island.

At present Governor Turner is working with the National Disaster Co-ordinator, Rachel Collins, in the preparation of project proposals for much needed training and equipment in order to improve the level of preparedness on Montserrat.

The National Disaster Co-ordinator is Secretary of the National Advisory Council.

ALERT ST. EUSTATIUS TOWER OPERATOR HELPS IN SAVING PILOT AND PASSENGER

On April 9th, 1987 the Airport Traffic Control of Julianna Airport Tower, St. Maarten, received a call from a pilot of a Cessna 337, (SkyMaster) advising of his intention to make an emergency landing at Runway 23 in St. Eustatius. He in turn informed the Tower Operator in St. Eustatius. The Fire Department was immediately alerted and preparations were undertaken for any eventuality.

Several attempts by the Tower Operator in St. Eustatius to make contact with the aircraft regarding location, altitude and estimated time of landing proved futile, and consequently, it was assumed the aircraft had crashed into the sea.

The Search and Rescue operations were initiated by the Lt. Gov. Sleeuwseijk and Airport Manager/National Disaster Co-ordinator, Cyril Lopes. Police and ambulance personnel, radio operators and a group of volunteers, were organised to effect the Search and Rescue mission.

A tug boat from the Search and Rescue team successfully rescued the pilot and passenger at sea, some 5 miles south-east of St. Eustatius. They were taken to the hospital by the Ambulance crew, who were on standby throughout the entire operation.

Abridged from report provided by E.A. Schmidt, Tower Operator, St. Eustatius, Netherlands Antilles.

PAHO/WHO SPONSORED MEETING IN WORTHING, BARBADOS

Nine National Disaster Health Coordinators attended a PAHO/WHO Sponsored Meeting June 1-3, 1987 which was held at the Caribbean Hotel, Worthing, Barbados.

Main agenda items included:
Reports by country representatives on the Status of Implementation of Health sector workplans in Disaster Preparedness 1986/1987 and also the status of implementation of recommendations made by the Coordinators at the last meeting in June 1986.

There was agreement on:
1. the "Terms of Reference" for the National Health Disaster Coordinators Guidelines.

2. The essential components of the National Health Sector Disaster Plan including Institutional and Community Disaster Plans.

Existing National Health Sector Disaster Management Plans will be reviewed and updated in the light of these guidelines.

Needs in relation to the further development of Disaster Management Plans were identified by each country. These will form the basis for a country specific workplans for 1987-1988.

The need for greater collaboration and communication between the National Coordinator in Disaster Preparedness and Management and the National Health Coordinator in each territory was identified.

The third day of the meeting focused on the "Psychological aspects of Disasters' and 'Crisis Intervention'. Mental Health Personnel from Barbados and other Caribbean Countries also participated in the third day's program.

For further information on this meeting contact Mrs. Gloria Noel, Health Emergency Preparedness Advisor, PCDPPP, Box 1399, St. John's, Antigua.
SPECIAL REPORT

An Overview of the Psychological Aspects of Disasters

Traditionally in disaster situations, the main objectives of relief efforts have been the management of casualties and the provision of food, water and shelter. However, it has become evident that the psychological impact of disaster affects not only victims/survivors, but also some members of the disaster response team e.g. firemen, police, rescue workers and health personnel.

Therefore, attention is now being given to the education/training of emergency intervention teams; so that they become skilled in assessing reactions, providing psychological first aid, and supporting not only disaster victims but rescue workers as well.

A disaster, either man-made or natural, differs from other life crises in that large numbers of people are involved. Natural disasters have the added dimension that man is powerless to stop them. Disaster victims may include all age groups as well as varying socio-economic classes and ethnic groups.

Survivors of disasters will generally show differences in their ability to tolerate the stress caused and their reaction will vary also. Immediately after a disaster, many people are psychological upset; but the majority will recover spontaneously or react quickly to psychological first aid. Some can be expected to have more severe and prolonged reactions. Those who may be susceptible to physical and psychological reactions after a disaster include people who:

(a) are vulnerable due to previous traumatic life events or crises;
(b) are at risk due to recent ill health;
(c) experience severe stress and loss;
(d) lose their system of social and psychological support;
(e) lack coping skills;
(f) those with a history of mental illness may require special assistance;

Therefore, behaviours and/or reactions to disaster situations are determined by personality (character make-up), experience, severity of the stressor, the degree to which the individual is affected, preparation/education in disaster management, current information and effective leadership. By learning the kind of reactions to expect and how to recognize, prevent, deal with and treat each reaction; the "rescue worker" will be able to understand and support those individuals who are psychologically or emotionally impaired.

Children require special consideration and care. Studies have shown that the mental and emotional disturbances evident among children are similar to those found in adults. Some children react to obvious signs of danger and to the sight of physical destruction, injuries and death; but generally, but reflect the reactions of their parents and other adults. Competent care of the adults will reflect favourably on children.

Avoid separation from parents and loved ones. If family units are disrupted, efforts should be made to reunite the members as soon as possible. Children should be removed from disaster areas when feasible, before community disorganization or disaster occurs. The maintenance of established activities and routines will encourage feeling of security.

During and following disasters, certain measures can be taken to reduce stress and prevent further problems. They are:

(a) Provide psychological first aid by reassurance, support and advice to affected individuals and community groups.
(b) Prevent fatigue by frequent rotation of emergency personnel.
(c) Provide warmth, food, shelter and rest. Try to maintain regular eating and eating sleeping schedules, especially for emergency personnel.
(d) Keep families together, especially parents and children; as well as neighbours or residents from the same communities.
(e) Provide leadership and use "emergency" leaders to enhance group cohesion.
(f) Assign meaningful duties or purposeful activity to keep victims occupied and to enhance shattered self-esteem.
(g) Do not leave frightened or injured people alone. Assign another survivor to remain with them, or put people in groups.
(h) Maintain a good communication network to prevent distorted rumours which may lead to irrational and impulsive behaviour.
(i) Refer to a mental health resource person if necessary, since the inappropriate or inadequate resolution of a problem can lead to long term problems.

Source: Excerpted from: "A DISCUSSION PAPER ON THE OVERVIEW OF THE PSYCHOLOGICAL ASPECTS OF DISASTERS"

By: Gloria Noel PAHO/WHO Nurse Administrator St. John's, Antigua.

May 1985
### The Following Table Summarises some Disaster Myths:

<table>
<thead>
<tr>
<th>MYTH</th>
<th>REALITY</th>
<th>PLANNING IMPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. People Panic</td>
<td>People behave quite rationally and responsibly except where there is a threat to life and no escape, no information, no leadership.</td>
<td>Help people to make responsible, reasonable decisions and prepare them in advance for dealing with Emergency Scenarios by creating Public Awareness of risks.</td>
</tr>
<tr>
<td>2. People cannot look after themselves.</td>
<td>People generally care for each other, helping those in need where possible.</td>
<td>Utilise people's wish to help each other and provide training in First Aid and other relevant skills.</td>
</tr>
<tr>
<td>3. Too much information is bad.</td>
<td>People respond appropriately to sound information from a reliable source. They may try to check it with those they consider credible before acting.</td>
<td>In an Emergency, try to provide clear, accurate and timely public information and warnings. Reinforce this by prepositioning information with community leaders or recognised authority figures who must be briefed in advance by Public Education Programmes.</td>
</tr>
<tr>
<td>4. Children are too young to be affected.</td>
<td>After the immediate responses children may hold back needs until after the crisis. Children often require special attention and counselling.</td>
<td>Children and families need to have long term support available, preferably from within the family or community.</td>
</tr>
<tr>
<td>5. If people don’t ’crack up’ they are not affected.</td>
<td>Few people ‘crack up’ but everyone is affected and suffer stress in varying degrees.</td>
<td>Community social and health worker education on stress effects and support should be part of preparedness and response training.</td>
</tr>
<tr>
<td>6. Communities never recover from disaster.</td>
<td>Communities may undergo trauma and permanent change may result but they can recover. This can be a positive development if improvement desired by the community is recognised and facilitated in the post disaster period.</td>
<td>Integrate local aspirations into recovery plans and use local coping mechanism and organizations. Try to plan ahead based on credible scenarios and recognising local resources including volunteers.</td>
</tr>
<tr>
<td>7. Emergency Workers are not affected.</td>
<td>Emergency Workers are also victims of disaster related stress in varying degrees.</td>
<td>All emergency services should provide debriefing and support for staff involved in disaster response. Try to ensure that appropriate improvements to response and recovery procedures are made, based on the workers experiences.</td>
</tr>
</tbody>
</table>
Factors Influencing Response to Disaster Warnings

1. Any warning messages broadcast, especially the early ones, will be accepted at face value only by a minority of the recipients. Most will engage in confirmation efforts for a time.

2. The more warning messages received by an individual, the fewer the attempts at warning confirmation.

3. The closer a person is to the target area of a warning, the higher the incidence of face-to-face communication and the larger the number of sources used in confirmation attempts.

4. Warnings from official sources (police, fire department etc.) are more likely believed.

5. Message, content per se influences belief. The more accurate and consistent the content across several messages, the greater the belief.

6. The more personal the manner in which a message is delivered, the more it will be believed.

7. Belief in eventual impact increases as the number of warnings received increases.

8. The recipient’s sense of the sender’s certainty about the message is important to belief.

9. Message credibility is related to what happens in the confirmation process. The response of official sources to questions which call for validation, corroboration, or refutation helps determine believability.

10. A person is more likely to believe a warning of impending danger to the extent that perceived changes in his physical environment support the contents of the message.

11. Persons who see others behaving as they believe a warning to be valid are themselves more likely to believe the warning.

12. Past experience may render current warnings less credible if disaster is not part of that experience.

13. The closer a person is to the target of warning, the more rumours he will hear and the less accurate will be his understanding of the character of the forecast events.

14. Persons do not readily evacuate on the basis of the first warning received and the number of warnings received thereafter is proportional to evacuation initiatives.

15. As warning messages increase in their accuracy, and/or information about survival choices, and/or consistency with other warnings, and/or clarity about the nature of the threat, the probability of positive response increases.

16. Whether or not a person takes action depends on his belief in the warning message. But even if he believes, he may fail to take adaptive action due to his misinterpretation of the meaning of the message content.

17. Evacuation tends to be a family phenomenon. The best way to accomplish evacuation appears to be repeated authoritative messages over broadcast media which stimulate discussion within the family and tend to evacuation (if it is going to happen at all).

18. Persons receiving face-to-face warnings in a family setting from authorities are more likely to evacuate.

19. Persons with recent disaster experience are more likely to take protective actions.

20. The perceived amount of time to disaster impact is important.

21. Belief that impact could occur at the location from which a person may be about to evacuate is crucial.

22. Older persons are less likely than the younger to receive warnings regardless of warning source, and less likely to take protective actions.

23. Regardless of the content of a warning message, people tend to define some potential impact in terms of prior experience with that specific disaster agent.

Sources: Foster (1980); Haas (1973); and Mileti (1975).
UPCOMING MEETINGS

PAHO/WHO will sponsor the 2nd Meeting of Caribbean National Disaster Health Coordinators, to be held in Barbados.

JUNE 29 - JULY 3; JULY 6 - 10, 1987.
Fire Management Training Seminar for Senior Fire Officers to be held in Antigua and Trinidad respectively. These meetings are being sponsored by OFDA/USAID in collaboration with PCDPPP, and NERO Trinidad. Countries participating are: Anguilla, Antigua, Dominica, Grenada, Guyana, Montserrat, Saba, St. Christopher and Nevis, St. Eustatius, St. Lucia, St. Maarten, St. Vincent and the Grenadines, Trinidad and Tobago.

PCDPPP will sponsor a Planning Meeting on Hazard Mapping in Kingston, Jamaica. Attending are representatives from UWI, OAS, UNEP, ODIPERC, OECS, Department of Natural Resources Puerto Rico.

A workshop on the role of the Health Sector in Disaster Management, sponsored by PAHO/WHO, will be held in Tobago.

PAHO/WHO will be sponsoring a workshop on Contents for Emergency Preparedness, in Georgetown, Guyana.

JULY 1987
PCDPPP through CANA Barbados, will broadcast live a discussion on Disaster Preparedness and Prevention, towards the end of July in all the countries served by CANA. Belize, Cayman Islands, St. Maarten and the Turks and Caicos Islands, however, will receive tape recordings.

The 19th International Conference on Geodesy/Geophysics will be held in Vancouver, Canada. Dr. Trevor Jackson of the Geology Department of the UWI will participate on behalf of ODIPERC, Jamaica.

The British Red Cross will sponsor a Pan-Caribbean Red Cross Conference in St. Christopher and Nevis. Among the topics scheduled for discussion is "Red Cross Preparedness and Relief in the Caribbean Region".

AUGUST
Scheduled for the Turks and Caicos Islands, is a Hurricane Simulation Exercise.

A series of Shelter Management Training Courses will be held for over 150 shelter managers selected from villages and disaster organizations throughout Dominica.

Review of Publications Available

Severe Hurricanes in the Caribbean 1492 - 1800 by: Colin A. Depradine

This publication deals with the more severe hurricanes known to have struck the West Indies prior to 1800. No historical writings describing these occurrences are available prior to Columbus' arrival in 1492; therefore, the first severe hurricane described occurred in 1493. For further information on this publication, please write to: CARIBBEAN METEOROLOGICAL INSTITUTE HUSBANDS ST. JAMES, BARBADOS 1985-08-21


This document deals with the development and track of Hurricane Allen, its impact and forecast performance. This document is available through the PCDPPP Library:
Reference: No. 0483 UNDRO Bibliographic Date Base, 1981

Caribbean Hurricanes - Their Climatology and Related Phenomena by: F.C. Farnum

This article covers tropical storms and hurricanes in the Eastern Caribbean, the formation, climatology, characteristics and effect of hurricanes. Available from the PCDPPP Library:
Reference: No. 3226 UNDRO Bibliographic Date Base June 1979

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The effects of Hurricane "Allen" on Agriculture in St. Lucia - with specific reference to the Banana Industry by: C. Crossburne

This document gives a general overview of St. Lucia, its contribution to agriculture, its agricultural projects prior to Hurricane "Allen", the impact and effect on the agricultural projects and the agricultural sector after Hurricane "Allen", struck. Available from the PCDPPP Library:
Reference: No. 3237 UNDRO Bibliographic Date Base, 1982
DAMAGE INTENSITY SCALE FOR LANDSLIDES
(Adapted from Natural Hazards Observer - January 1987)

In making your hurricane plans, please remember that Landslides and Slope Failures associated with hurricanes or heavy rainfall is a persistent problem in many Caribbean Countries. The following article by Dr. David Alexander of the Department of Geology and Geography of the University of Massachusetts which was published in the Natural Hazards Observer of January 1987 proposes an intensity scale for Landslide Damage to Buildings. We invite you to review this article and consider sharing its contents with physical planners, geologists, engineers and geographers in your country.

The PCPPP is very interested in having from persons in the region working actively on Landslides or related problems and is soliciting short histories on Landslide Studies as well as photographs for inclusion in future issues of this Newsletter.

- The Editor

In the United States, ground failure costs more than one billion dollars annually. Large cities such as Cincinnati, Los Angeles, Pittsburgh and Seattle are highly susceptible to damaging slope failure. Smaller settlements are similarly affected - more than two million documented landslides have occurred in Appalachia, and the nine countries of the highly urbanized San Francisco Bay region have serious ground failure problems. Despite the significance and expensiveness of this hazard, it is surprising how little the consensus there is about the actual distribution of landslide hazards. The Appalachians, Rockies, Cascades, and Pacific Coastal Rangers are recognized as areas of high mass movement susceptibility, but there are "grey" areas elsewhere in the country. The landslide potential of the Great Lakes shores and northern Cascades and Rockies is debatable, and areas with the greatest pressure of urbanization upon unstable slopes include Alabama, Illinois, and Texas.

ratio), studies of the urban landslide hazard have concentrated on the former and produced a substantial body of knowledge on hazard mapping, risk analysis, geotechnical aspects of slope stabilization, and the feasibility - or infeasibility - of insurance schemes. Aspect of the problem that have tended to be ignored are the role of geological consultancy in both pre-and postdisaster planning, and the assessment of landslide damage to buildings. Studies of the participation of geologists before or after landslide disasters suggest that there is frequently misapplication of basic training and a failure to link one professional discipline with others. With regard to the former difficulty, engineering geologists need to be better able to apply their knowledge in order to provide timely slope stability information to land owners and local authorities. The latter problem can be alleviated by integrating geological studies of slope stability into planning instruments and engineering programs. New geo-techniques are not needed; new organization is.

Impact assessment is the area of study that has been most neglected. If we cannot stop urban landslides, we should at least be able to recognize their common and recurrent features. It is not unusual for large numbers of buildings at a site, or substantial sections of the urban fabric, to be damaged by a landslide, but currently we have no way to classify and compare such damages. The possible motives for surveying and classifying landslide damage are 1) to issue postdisaster evacuation or demolition orders, 2) to estimate the need for repair and reconstruction, 3) to assess the extent of the phenomenon, and 4) to help lay groundwork for reconstruction plans.

Since prior mitigation is much cheaper than postdisaster repair (perhaps by as much as a 9-to-1
I have devised an urban landslide damage intensity scale, with the basic version reprinted here. Damage is rated in terms of seriousness - the extent to which a building is repairable - and with reference to the point at which ground movements caused structural collapse. Where a large number of buildings are damaged, the scale can be used to derive an intensity map, which may be compared to maps of site geology or morphological changes. This reconstruction depends first on an ability to halt, drain, and stabilize the landslide, and second on an appropriate level of technology and a corresponding expenditure on repairs.

The scale is proposed not to produce a definitive classification scheme, but to stimulate further improvements in methods, such as those applied to earthquake intensity scales since their development in the late 1700s. I hope also to provoke discussion among experts in different fields, for it is only through interdisciplinary work that the urban landslide hazard can be tackled.

David Alexander
Department of Geology and Geography
University of Massachusetts

scale is applicable to landslide damage from subsidence, translational or rotational movements, or slow thrusts, but not to that incurred from avalanching debris, although that is an occasional hazard in urban areas. Although the scale refers to the possibility of repairing damaged buildings, open cracks in walls; fracture of structural members; fragmentation of masonry; differential settlement of at least 25 centimeters comprising foundations; floors may be inclined by one to two degrees or ruined by heave. Internal partition walls will need to be replaced; door and window frames are too distorted to use; occupants must be evacuated and major repairs carried out.

5 Very Serious. Walls out of plumb by five six degrees; structure grossly distorted; differential settlement has seriously cracked floors and walls or caused major rotation or slewing of the building (wooden buildings are detached completely from their foundations). Partition walls and brick infill will have at least partly collapsed; roof may have been damaged more seriously than the principal structure itself. Occupants will need to be rehoused on a long-term basis, and rehabilitation of the building will probably not be feasible.

6 Partial collapse. Requires immediate evacuation of the occupants and cordonning of the site to prevent accidents with falling masonry.

7. Total Collapse. Requires clearance of the site.

INTENSITY SCALE FOR LANDSLIDE DAMAGE TO BUILDINGS

0 None. Building is intact

1 Negligible. Hairline cracks in walls or structural members; no distortion of structure or detachment of external architectural details.

2 Light. Building continues to be habitable; repair not urgent. Settlement of foundations, distortion of structure, and inclination of walls are not sufficient to compromise overall stability.

3 Moderate. Walls out of perpendicular by one to two degrees, or there has been substantial cracking in structural members, or the foundations have settled during differential subsidence of at least 15 centimeters; building requires evacuation and rapid attention to ensure its continued life.

4 Serious. Walls out of perpendicular by several degrees;
Are Your Plans up to Date for Dealing with these

NATURAL DISASTERS:
Earthquake, drought, hurricane, landslide, volcanic eruption, flood, tidal wave.

MAN-MADE DISASTERS:
Fire, explosion, pollution, power failures, nuclear fallout, exposure to radiation, aircraft accident, oil spills.

COUNTRIES PARTICIPATING IN THE PROJECT
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PUERO RICO
ST. LUCIA
ST. CHRISTOPHER/NEVIS
ST. VINCENT & THE
GRENADINES
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TRINIDAD & TOBAGO
TURKS & CAICOS ISLANDS
US VIRGIN ISLANDS

WORST GUEST LIST FOR 1987
(Hurricane Names)
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BRET MARIA
CINDY NATE
DENNIS OPHELIA
EMILY PHILIPPE
FLOYD RITA
GERT STAN
HARVEY TOMMY
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KATRINA

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