HURRICANE PREPAREDNESS AND RESPONSE PROCEDURES

Introduction

Hurricanes are a fact of life in the Caribbean. Within the past decades, several hurricanes have unleashed their fury on the islands of the Caribbean. Hurricanes David in 1979, Allen in 1980, Gilbert in 1988, Hugo in 1989, Luis and Marilyn in 1995, Georges and Mitch in 1998, Keith in 2000, Charley, Frances, Ivan and Jeanne in 2004 and Katrina and Wilma in 2005 all caused significant damage to infrastructure in the region. In 2004 alone, hurricanes caused about $30 billion worth of damage in the Caribbean.[6] The tourism industry, an important economic sector for many Caribbean countries, suffered severe impacts, from damage to hotels to loss of business. This section discusses the characteristics and impacts of hurricanes, and what tourism businesses can do to both prepare for and respond to hurricanes, to limit long-term impacts on the tourism sector.

What is a hurricane?

A hurricane is a **tropical cyclone** in which the maximum average wind speed near the center, or eye, exceeds 74 mph (119 km/h). The winds rotate in a counter-clockwise spiral around a region of low pressure. Such a system is known as a hurricane only in the Atlantic Ocean and eastern Pacific Ocean. In the western Pacific, including the Philippines, it is called a *typhoon*; near Australia, a w*illy willy*; and in the Indian Ocean, a *cyclone*.

Characteristics of a Hurricane

Season: Commences June 1 and ends November 30, but storms may occur at other times of the year

Speed of advance: Approximately 20-25km/hr (12-15 knots)

Course: Normally east/southeast toward west/northwest and northwest during initial stages, but storms curve toward the north as they progresses (in the Northern Hemisphere)

Wind speed: Generally in excess of 135 km/hr (75 knots), but may gust up to 315 km/hr (175 Knots), as in Hurricane Gilbert in September 1988

Width of destruction: 170-250 km (106-155 miles)

Eye: Center of the hurricane where there are no winds and where barometric pressure is very low

Lull: A deceptive period lasting approximately 30 minutes when the eye passes. Wind speed quickly resumes intensity, immediately after the eye passes.

The World Meteorological Organization uses tropical cyclone as a generic term to define any weather system developing over tropical or subtropical waters with a definite organized surface circulation and winds exceeding 34 knots, or 63 km/h.

Four conditions are necessary for the development of a tropical cyclone:

[6] Economic Commission for Latin America and the Caribbean.

- A warm sea temperature in excess of 26 degrees Celsius (79 degrees Fahrenheit);
- High relative humidity (the degree to which air is saturated by water vapor);
- Atmospheric instability; and
- A location of at least 4 - 5 latitude degrees from the equator.

A cyclone goes through four phases of development on its way to becoming a hurricane:

1. **Tropical Disturbance:** A weather system that gives rise to a specific area of cloudiness with embedded showers and thunderstorms.
2. **Tropical Depression:** A tropical cyclone system with definite counter-clockwise wind circulation and maximum sustained winds of less than 38 mph (61 km/h). At this stage, the system is given a number for easier identification and tracking.
3. **Tropical Storm:** A tropical cyclone system with maximum sustained surface winds greater than 38 mph (61 km/h) but less than 74 mph (119 km/h). At this stage, the system is given a person's name.
4. **Hurricane:** A tropical cyclone with wind speed greater than 74 mph (119 km/h). The weather system is now better organized and the eye is well-defined.

The Saffir/Simpson Scale, shown below, is used to classify hurricanes into one of five categories, according to intensity:

Saffir/Simpson Hurricane Scale

Category	Mean central pressure (millibars)	Winds mph (km/h)	Surge (feet)	Damage	Example
1	980 or more	74-95 mph (119-151 km/h)	4-5	Minimal	Agnes 1972
2	965 - 979	96 – 110 mph (152 – 176 km/h)	6-8	Moderate	Kate 1965
3	945 - 964	111-130 mph (177 – 209 km/h)	9-12	Extensive	Elena 1985
4	920 - 944	131 – 155 mph (210 – 248 km/h)	13-18	Extreme	Hugo 1989
5	less than 920	more than 155mph (248 km/h)	more than 18	Catastrophic	Gilbert 1988

Associated hazards of hurricanes

Tropical cyclones have the potential to cause severe levels of impact to anything in their paths. Among their associated hazards are:

- **Destructive winds:** The strong winds generated by tropical cyclones circulate clockwise in the Southern Hemisphere and counter-clockwise in the Northern Hemisphere. Winds spiral inward and move toward the cyclone center, with wind speeds progressively increasing toward the core. As the eye arrives over an area, winds fall off to become almost calm, but rise again just as quickly as the eye passes and are replaced by hurricane-force winds blowing from a direction nearly the reverse of those from before the lull. The strongest winds of a hurricane in the Northern Hemisphere are those in its right side (right quadrant) to the direction of movement, since the speed of advance adds its magnitude to the speed of the winds on that side.

- **Storm surges:** A surge is the rise in sea level above the normal tide (See Saffir-Simpson Scale above). As the cyclone approaches the coast, the friction of strong onshore winds on the sea surface, plus the ”suction effect” of reduced atmospheric pressure, can pile up sea water well above predicted tide levels along the coastline near the cyclone's landfall.

- **Excessive rainfall and floods:** The high humidity within a cyclone condenses into rain and giant cumulus clouds result in high precipitation rates when the storm reaches land. Heavy rains can rapidly saturate the ground, with run-off resulting in severe flooding.

Likely impacts of hurricanes

- **Physical damage:** Physical structures can be damaged or destroyed by wind force, storm surges, landslides and flooding. Public utilities, such as overhead power lines, water and gas distribution lines, bridges, culverts and drainage systems are also vulnerable to severe damage. Fallen trees, wind-driven rain and flying debris can also cause significant impacts.

The Hurricane Warning System

The following warnings will be issued before a hurricane. Staff members should pay careful attention to these warnings as there are certain procedures to follow after each phase. Some radio and television stations in the Caribbean have a special signal that precedes warning messages, and staff should become familiar with these signals.

Phase A - HURRICANE ALERT: Hurricane entering the region that will likely impact the country.
Phase B - HURRICANE WATCH: 36 hours to landfall.
Phase C - HURRICANE WARNING: 24 hours to landfall.
Phase D - EMERGENCY PHASE: Impact.
Phase E - RECOVERY PHASE: After the “all clear” is given.

- **Crops and food supplies:** The combination of high winds and heavy rains and flooding can ruin crops and trees. Food stocks may be lost or contaminated, and it is possible that food shortages will occur.

- **Casualties and public health:** There are relatively few deaths associated with the impact of high winds. Storm surges, on the other hand, can cause many deaths. The most significant threat to public health may emerge in the aftermath of the storm, when conditions such as water contamination or shortages, flooding and damage to sanitation facilities may facilitate the spread of diseases.

- **Lack of communication and transport:** Communication may be severely disrupted as telephone lines, radio and television antennas and satellite disks are blown down. Roads and railway lines may be blocked by fallen trees or debris, and aircraft movements are generally curtailed for hours after a cyclone.

Preparedness: Before the Hurricane Strikes

There are a number of actions that hoteliers and owners of tourism venues should take well in advance of any hurricane strike, in order to improve their capacity to respond in case of an emergency. Following these ten steps will help you design an effective plan and procedures to ensure that you are prepared to face the impact of hurricanes and other storms and to protect your staff, guests, facilities, equipment, information and the environment. Remember, guest and staff safety and protection are the hotel's responsibility.

Step 1: Create your Emergency Committee

Establishing an Emergency Committee (EC) can help ensure that this manual – and any hurricane plan and procedures derived from it – becomes an integral part of the culture and practice in your establishment. This committee will serve as the **overall coordinating and executing body for all emergencies** and will be responsible for managing and implementing emergency preparedness mechanisms at all stages of a hurricane.

The members of the Emergency Committee should be appointed by management and headed by an Emergency Coordinator, who is usually the General Manager or Director of Operations. An Alternate Emergency Coordinator should also be designated in case the Emergency Coordinator is absent. The committee should also include a public relations person, an environmental person (if your facility has one) and at least one representative from each department (or area of a hotel or resort). These representatives might come from areas including guest relations/services, human resources/staff, housekeeping, engineering and maintenance, food and beverage, front desk, financial controller/accounting, and security.

The committee's membership can be expanded or reduced, depending on your own organizational structure. If your staff is small, you can assign different tasks to one person according to their normal responsibilities.

The first five tasks of the Emergency Committee should be to:

1. Determine how your hotel will operate during a hurricane emergency and impact, i.e. if it will continue operations or if it will be closed down.
2. Designate responsibilities for action before, during and after a hurricane.
3. Design your Hurricane Plan and Emergency Procedures.
4. Familiarize the EC members with the plan and its procedures.
5. Help the rest of the staff to become familiar with the plan.

The Emergency Committee should meet regularly throughout the year as part of a permanent emergency planning process, to keep the plan updated and ”alive” to ensure an effective response if it has to be activated.

At the end of March, in preparation for hurricane season, the EC should meet to review the maintenance report, review priority areas for action and review hurricane procedures with all staff. At the start of hurricane season, in early June, the committee should meet again to review and assess the level of preparedness and fine-tune emergency procedures.

Step 2: Assess vulnerability and risks

The Emergency Committee should assess the vulnerability of your hotel/resort to determine which rooms and areas are at risk and which are safe locations. All buildings should be checked each March for both structural defects and non-structural vulnerability. This assessment should include an examination of windows, doors, walls, roofs, equipment, furniture, documents, etc., and any problems should be repaired or corrected before the hurricane season. The Chief Engineer/Head of Maintenance should be responsible for this within the Emergency Committee structure, using the forms and procedures in this manual and obtaining external expertise where necessary.

Among the components of this overall assessment are:

- A **structural vulnerability assessment** of all buildings instituted as a permanent function of the Engineering Department (where one exists), or given to persons with equivalent responsibility. Any findings should be acted upon immediately.
- A twice-annual **non-structural vulnerability assessment** to be implemented in March and July of each year, using the CHA/CTO Building Assessment Safety Checklist (see Form 2, Annex A at the back of this manual). The results of this assessment should be incorporated into the building maintenance programs.
- Ensuring that the facility is in **compliance** with the national building code.
- Creation and implementation of a **hurricane maintenance program**, focused particularly on roofs, windows, doors, etc.
- Preparation of a basic **maintenance budget**.

Once you have assessed the vulnerability of your hotel to the impact and effects of a hurricane, you can use the assessment reports to determine whether the hotel could continue operations during the impact of a hurricane. Knowing whether the hotel would close down allows you to plan what to do with your guests. If they cannot stay, you can recommend that they go back to their countries, go to public shelters (only if agreed with the National Disaster Organization) or go to a safe hotel. If you are recommending that they go to a safe hotel, you should have previous mutual aid agreements with the hotel (see

Step 6 below). If, for whatever reason (large numbers of guests, adequate safe rooms/areas, low vulnerability, limited flights back to their countries), you decide to keep your guests in safe rooms or areas in your hotel, then you should inform them about what they have to do, from the alert phase until they leave.

The vulnerability and risk assessments can also help you determine:

- The most appropriate location within the facility to serve as the **Command Center** during the event. The Command Center is the room where the EC members will coordinate emergency operations during the emergency and after the impact of a hurricane. It is activated by the Emergency Coordinator depending on the situation. You would need a Command Center in your hotel if guests are staying in it during the impact of the hurricane;
- Which room will be designated as your **communications room**. (See Appendix 1 for information on developing a communications plan);
- Which room may be easily converted for use as a **first aid center**, if you will have one;
- Where **vital records** will be kept. Vital records of the company should be kept in a secure location on-site at all times, with copies stored off-site. All magnetic tapes and computer disks should have back-ups in safe storage;
- Where **food and drinking water** will be stored before the impact of the hurricane;
- Where **hurricane supplies** such as shutters, plywood, chainsaws, fuel, flashlights, batteries, etc. will be stored;
- Where **housekeeping supplies** will be stored during the hurricane impact;
- Where **water** will be safely stored (tanks, bathtubs, etc.);
- Where all **furniture** will be safely stored;
- Where **equipment**, such as TVs or computers, will be safely stored; and
- A safe location for your **vehicles**.

Form 3 (at the back of this manual) can help you prepare a list of safe locations in your hotel.

Step 3: Establish an early warning system

It is very important to **track hurricanes** during the hurricane season, so that you can always be ready to warn guests and staff about an emergency. Contact your National Disaster Organization to find out how the warning phases (alert, watch, warning and all clear) will be issued to the public so that you can warn your hotel Emergency Committee and staff and guests in time. An early warning can help the EC to take effective action according to the hotel's plan and procedures at each phase.

Additional steps for hurricane tracking might include:

- Keeping a radio tuned to a relevant news channel;

- Installing weather band for continuous reports during the hurricane season;
- Putting a TV and radio in the main office or by the front desk to allow continuous monitoring of weather information;
- Checking the following websites (where internet access is available) and sharing relevant data with the EC, staff and guests:
    - **National Hurricane Center:** http://www.nhc.noaa.gov/
    - **Caribbean Disaster Emergency Response Agency (CDERA):** http://cdera.org

Keep all telecommunications devices (radios, telephones, cell phones, computers, personal data assistants, satellite phones, etc.) in your hotel in good working order and available at all times to warn all members of the Emergency Committee and allow them to coordinate the response during emergencies and disasters. In any situation, it is vital to maintain contact with your National Disaster Organization to ensure that you are warned in time and officially.

Step 4: Involve staff and guests in your plan

Always be prepared to **inform staff and guests** about an emergency, and to involve them in preparations to face the impact of a hurricane.

Guests should be informed in writing and personally at every phase before the impact (alert, watch and warning) and again after the impact. Prepare letters beforehand that would be distributed to each room at each stage. (You can use Form 4, Annex A at the back of this manual as a guide).

Based on your previous vulnerability assessment and the likely strength and impact of a particular hurricane, determine if guests will remain at the hotel in safe rooms or be taken to public shelters, or whether your hotel will be shut down. If you are shutting down, guests should go to other hotels or be asked to go back to their countries of origin if possible. All of these arrangements should be made in coordination with tour operators, the Tourism Emergency Management Committee and the National Disaster Organization, according to their capabilities and their evacuation/shelter/relief policies.

It is also important to determine which staff will stay during emergencies and which will go home. Keep updated lists of personnel and contact information. Staff not involved in the response should be sent home before the impact of the hurricane, while staff who have to remain in the hotel should be allowed to ensure that their families and homes are safe to withstand the hurricane.

Any guests or staff who are to stay in your hotel should be involved in the emergency and recovery activities. They can be an important part of the overall response/recovery team.

Step 5: Liaise with tourism and disaster management organizations

To ensure that you are prepared in case of a disaster, it is important to establish a liaison with your country's **Tourism Emergency Management Committee** and participate in any meetings organized by the Committee, the MOT and/or your Hotel Association as needed.

Establish contact with the **National Disaster Organization** and with emergency agencies, such as the police and hospitals, which would help you in the case of an emergency or a disaster. Ensure you know the emergency plans of the tourism sector and those from the National Disaster Organization and find out about the national warning system to ensure your hotel is warned in time. Keep updated directories of all agencies you would need to contact permanently and during and after emergencies.

Ensure that the nearest medical clinics and hospitals have a copy of the establishment's Emergency Plan, including the location of a triage/first aid area if one has been selected within the establishment.

Finally, get a copy of the **National Hurricane Plan** and one of the **Tourism Sector Hurricane Response Plan**, so that you will know what other agencies will be doing at the same time during emergencies and disasters.

Step 6: Identify your needs and establish mutual aid agreements

Estimate your needs in terms of **services, equipment and supplies** during an emergency, based on what your general requirements are during normal times. Prepare inventories and check stock before the hurricane season and during the emergency phase, using Forms 5 and 6 at the back of this manual. Enough supplies (food, water, toiletries, flashlights, etc) should be stored before the impact of a hurricane, to ensure guests and remaining staff would have supplies to survive even if the country is in a state of disaster at least for a few days. All these supplies should be stored in safe places before any impact.

Earmark and allocate funds for procurement of emergency supplies, and for regular maintenance of facilities. Determine the major emergency supplies priorities for each department, such as the kitchen, housekeeping, engineering/maintenance, first aid, etc., and include those in your emergency budget. Make requisitions for supplies needed and prepare purchase orders ahead of time to ensure quick arrival of emergency supplies. It is also important to set a policy for handling keys and access to emergency supplies.

In preparation for any disaster, you should formulate and adopt specific **Mutual Aid Agreements** with goods suppliers, other hotels, neighboring facilities and operators on other islands, where applicable, using Form 7, Annex A at the back of this manual as a guide. Important topics to cover in these agreements include safe accommodations for guest, potable water supplies, food supplies, hardware supplies, diesel and gasoline supplies, transportation for workers and possible evacuation of guests, and heavy equipment service and rentals. Purchase agreements can be negotiated on a contingency basis where necessary, for hardware supplies, for example.

Mutual aid agreements should be reviewed and updated annually, and, where possible, partners should share their resource inventories that relate to particular agreements.

Step 7: Get insurance coverage

The General Manager, in consultation with the Board of Directors if there is one, should define hotel policy on insurance coverage for **physical structure, liability and loss of profit**. Once you determine what type and level of insurance to purchase, based on discussions with relevant parties and advice from insurance companies, acquire a policy as soon as possible.

The following are important considerations when contracting and evaluating your insurance coverage:

- Insure only with a reputable, secure company.
- Ensure that the description of premises is correct, including the number of rooms, number of floors, boundary lines, etc.
- Be certain that property values are realistic, in order to avoid co-insurance penalties if you have a big loss. Co-insurance requires that you, the insured, pay a portion of the loss.
- Be certain that you cover all you intend to cover, i.e. in addition to structures, remember pots and pans, artwork, signs, fences, trees, shrubbery (inside and outside), tennis courts, swimming pools, awning, seawalls, piers, docks, etc. For computers, list all

Example of "Description of Premises" Wording

Description and Location of the Property Covered

On all real and personal property of every kind and description including any kind of signs and fences, including Paths, Roads, Foundations, Seawalls, Docks and Piers, Tress and Shrubbery (Inside and Outside), Landscaping including Palm Trees, Tennis Courts and Swimming Pools, whether loaned, leased, owned and/or controlled by, or in which the insured may have insurable interest or be liable for, and which is used in the operations of the insured, and their various facilities, including property in trust or on commission or which they may have attached as creditors, all while located at: (Name and Physical Address of your Hotel).

(Courtesy of : Joseph Murray, The Murray Group, Hato Rey, Puerto Rico)

hardware and software. Also consider boiler and machinery coverage, if applicable. Policy descriptions should be as broad as possible.

- Ensure that the policy includes coverage for debris removal and flooding, and confirm this in writing.
- Consider coverage for loss of utility service due to off-premises equipment failure (light, telephones, water).
- Determine liability levels and ascertain whether you need local or international jurisdiction clauses. If you have no property or financial exposure in the United States or Canada, you may opt for local jurisdiction. If, however, you have such property or exposure, you must take international jurisdiction, as a suit can be brought against you, and your policy can only stand if it has international jurisdiction.

Business interruption insurance

Although business interruption (loss of earnings) insurance is important coverage, such a policy should be carefully executed. Complete a business interruption worksheet with your insurance agent or broker to determine the value to be insured, stating the exact period (three months, six months, twelve months) for which loss of earnings coverage is required. The policy should cover those costs needed during the restoration phase, such as payroll, trucking or purchasing water, transportation, and other unbudgeted or extra expenses.

Business interruption coverage normally ends thirty (30) days after physical damage has been repaired, unless endorsement states otherwise. It is more realistic to include additional time, because hotel business is not usually restored immediately following repairs. Keep in mind that, although beaches and land are not insurable, not is loss of market, damage to these will affect your business. Consider these factors when you are negotiating interruption policies.

In order for the business interruption clause to apply, you must have direct physical damage to the plant, unless the policy carries an endorsement to cover interruption due to factors off-premises. All policies also have a “due diligence” clause which means that in order to claim for business interruption, you must do everything you can to get back in business as quickly as possible.

In the event of an emergency:

Be prepared to document any damage after impact by deploying a team from the EC to assess damage to the hotel.

Make sure you have still and video cameras ready to be used after the impact for documenting any effects.

Always keep all insurance records and documents in a safe and readily available place, so you can access them immediately if you need to make a claim. Keep the name and telephone numbers of your insurance agent, broker and company handy, and find out from your broker the name and location of the person to be contacted when there is a claim. If you have any questions concerning your coverage at any time, contact your agent, broker or company and get a written reply.

In preparation for filing a claim, work closely with your accountant to ensure that all items are included.

Present as much information as possible, and remember that pictures are worth a thousand words. In case of a major loss, take photographs and, if possible, a video recording as well.

Maintain close interaction with your agent or broker during the processing of a claim, develop a working relationship with the insurance adjustor and be pro-active in getting your insurance company fully involved with your claim. Always demand full-quality service.

Step 8: Write your own hurricane plan and emergency procedures

Use this manual to prepare your own **site-specific hurricane plan and procedures**. Assign individual staff responsibilities and adapt the procedures included in this document to your own characteristics and needs. Make adjustments as necessary.

Step 9: Revise, update and test your hurricane plan and procedures regularly

The emergency planning process does not end once you have completed the design of your own plan and procedures. They need to be revised, tested and updated regularly, as organizations and personnel change. Reviews and testing should be done **annually**, preferably before the onset of hurricane season. These reviews should take into account any recent vulnerability assessments and requirements for maintenance, repair and retrofitting.

The procedures should also be integrated into the overall management plan for the organization, in terms of company policy, operational budget, training and job descriptions.

Training is vital to the success of hurricane preparedness and disaster management, and properties should communicate requirements to their staff so that they understand the full plan and their specific responsibilities. Training programs should be developed to ensure that staff members will be able to successfully execute their assigned tasks. The details for each property and department should be enhanced through training drills and simulation exercises.

Step 10: Follow the hurricane plan and procedures in an emergency

Each time the threat of a new storm becomes known, **convene an EC meeting** and distribute the latest version of the plan and procedures, so that it can be discussed and followed. Staff involved in the preparations and response to the hurricane should have with them a copy of the specific procedures for which they are responsible. Directories and forms that have to be used along with the procedures should also be distributed.

Hold EC meetings **after every new phase** of the warning system (alert, watch, warning, all clear) to be briefed about the situation and to be sure about what to do next, according to the plan. After every storm, whether or not there was any impact, be sure to have a final meeting with EC members and guests to let everybody know about the results of preparations and thank them always for their participation.

Response: During the Hurricane

Since the path of a hurricane is generally predictable, there is usually **time to make preparations** for its possible impact. Hoteliers should be well-prepared to implement their emergency plans and procedures to protect their guests, staff and property during hurricane emergencies.

Hoteliers should know their facilities, what could be damaged and what should be protected. Their first responsibility during the a hurricane is towards the **protection of human life**, specifically their guests and staff, by ensuring that they are safe at all times in safe locations or areas within the hotel or in other safe places, such as other hotels or at home (staff).

Hoteliers should also protect their property and the environment by assessing and reducing vulnerability through mitigation activities, and ensuring that facilities are structurally sound enough to resist the impact of a hurricane. (see Appendices 3 and 4, Annex B for more information on structural vulnerability- and loss-reduction techniques.)

Assigning responsibilities

Once a hotel's hurricane response plan has been completed (by following the steps in the previous section), a hotelier should determine who is responsible for which activities, such as tracking the hurricane, protecting guests and staff, protecting facilities, reducing vulnerability by trimming trees and storing furniture and equipment in safe places, backing-up vital records and keeping them in a safe place, ensuring supplies are stored in a safe place to be used after the impact of the hurricane, protecting the environment and having a public relations policy and plan in place. All these activities should be assigned to specific personnel, through the Emergency Committee, based on the organization and staff structure of the hotel.

This section is designed to help you understand what needs to be done during each phase of a hurricane emergency (alert, watch, warning, emergency and recovery), so that every member of staff and the Emergency Committee would know exactly what to do during an emergency or disaster. After a description of general activities for each phase, model emergency procedures are presented for various members of the EC. By carefully following these procedures and protecting guests, staff and property from the impact and effects of hurricanes, hotels can ensure that they will recover and resume business as soon as possible. The model procedures presented here include some activities for the beginning of the recovery period, immediately following the impact of the hurricane. More detailed information on long-term recovery and consequence management issues is given in the Multi-Hazard Recovery Plan section at the end of this document.

General Response Procedures

General emergency response activities should begin as soon as a hurricane alert has been issued, when a storm is in the region and is likely to hit the country. The following are general response procedures that should be followed during each phase of the hurricane's progression:

Phase A: Hurricane Alert (tropical cyclone in the region)

- ✓ Convene a meeting of the EC.
- ✓ Hold a meeting with guests.
- ✓ Place a letter and hurricane information in guests' rooms.
- ✓ Track the storm/hurricane and post a chart/map in reception area.
- ✓ Verify working conditions/availability of emergency equipment.
- ✓ Verify inventories of food, water, hurricane supplies, etc.
- ✓ Check telecommunications equipment.
- ✓ Update directories (staff, suppliers, Tourism Sector Emergency Committee, NDO, Met Office, nearby medical facilities, etc.)

Phase B: Hurricane Watch (36 hours to landfall)

- ✓ Convene a meeting of the EC.
- ✓ Hold a meeting with guests.
- ✓ Place an updated letter and hurricane information in guests' rooms.
- ✓ Update the hurricane chart/map.
- ✓ Ensure there are enough emergency supplies (food, water, fuel, etc.) in the hotel.
- ✓ Update staff list.
- ✓ Clean drains, remove debris and trim trees.
- ✓ Test generator and replenish diesel fuel.
- ✓ Check lists and status of safe rooms and locations.

Phase C: Hurricane Warning (24 hours to landfall)

- ✓ Convene a meeting of the EC
- ✓ Hold a meeting with guests.
- ✓ Place an updated letter and hurricane information in guests' rooms.
- ✓ Settle all guests' bills.
- ✓ Update the hurricane chart
- ✓ Activate the Command Center.
- ✓ Close down restaurants, bars, boutiques, sports, etc.
- ✓ Raise shutters.
- ✓ Put all food and beverages in safe locations.
- ✓ Put all furniture in safe locations.

- ✓ Put all equipment in safe locations.
- ✓ Back up all vital records and put them in safe locations.
- ✓ Put all valuables (including guests') in safe locations.
- ✓ Lock all empty rooms.
- ✓ Send home all staff not needed during the emergency.
- ✓ Shut down utilities.
- ✓ Re-locate guests to safe rooms or areas.
- ✓ Ensure there are several days' worth of supplies available for staff and guests remaining in the hotel. (3-7 days).
- ✓ If your hotel is closing down during the emergency, ensure all guests have left, dispatch all staff and go home. Keep security personnel in a safe area inside the hotel.

Phase D: Emergency Phase (during impact)

- ✓ Make sure key EC members remaining in the hotel stay in the Command Center.
- ✓ Make sure that guests stay in safe rooms or areas.

Phase E: Recovery Phase (after the "all clear" is given)

- ✓ Convene a meeting of the EC, after the "all clear."
- ✓ Hold a meeting with guests.
- ✓ Conduct a head count of both staff and guests.
- ✓ Start a damage and needs assessment.
- ✓ Report the results of this assessment to your national Tourism Disaster Management Committee.
- ✓ Request relief and assistance from emergency agencies as needed.
- ✓ Start rehabilitation of utilities and services.
- ✓ Re-initiate hotel operations when possible.
- ✓ Start re-construction.

Model Emergency Committee Procedures

This section details specific activities for each member of the Emergency Committee both in terms of general preparedness and at each phase of a hurricane's progress.

General Manager/Emergency Coordinator

Hurricane preparedness

- ✓ Be responsible for the overall coordination of regular hotel or resort operations and hurricane procedures.
- ✓ Create the Emergency Committee with key members of staff.

- ✓ Ensure vulnerability assessment is conducted and external experts are hired where necessary.
- ✓ Institute preventative measures to minimize vulnerability and risk.
- ✓ Liaise with emergency and information services (e.g. the National Disaster Organization, Tourism Sector Emergency Committee, Meteorological Office, nearby medical facilities, appropriate community contacts, etc.) as well as mutual aid partners.
- ✓ Know the hotel's supply needs for both normal and emergency times. Write and sign mutual aid agreements with companies and organizations that could provide supplies and assistance during emergencies and disasters.
- ✓ Ensure the hotel/resort is insured for the case of hurricane.
- ✓ Meet regularly with departmental heads and members of the EC, and ensure they meet with their staff to review the plan and implement preparedness and mitigation activities.
- ✓ Provide staff with adequate training regarding disaster management, first aid, etc., and the implementation of these procedures.
- ✓ Define, in consultation with the Board of Directors, the hotel policy on communications (see Appendix 1, Annex B).
- ✓ Hold discussions on community relations and determine policy to be followed in terms of emergency assistance. Implement this policy as soon as a decision is reached, by informing the National Emergency Organization, hotel management, staff, and community members.
- ✓ Define policy on acceptance of local guests in the event of a hurricane, and responsibility to the community in terms of assistance.
- ✓ Disseminate the plan and ensure all staff and guests know what will be done if an emergency occurs.
- ✓ Plan, execute and evaluate simulation exercises to test the response of the EC and to improve the plan.
- ✓ Revise the hurricane plan and procedures every year and after every real event.

Phase A: Hurricane Alert

- ✓ Convene an emergency meeting of the EC to inform them about the situation and to activate the plan and procedures.
- ✓ Ensure each member of the EC executes his or her assigned responsibilities at this stage and is briefed after the tasks have been completed.
- ✓ Convene a meeting with guests to inform them about the situation and about measures to be taken.
- ✓ Ensure the storm/hurricane is being tracked and maps are posted at the reception area.
- ✓ Reconfirm mutual aid agreements, if necessary, and revise requirements as perceived.
- ✓ Check and revise phone numbers of all department heads, supervisors and key personnel. Develop an alternate list, based on who is available (i.e. not on vacation, sick, etc.)
- ✓ Ensure telecommunications equipment is in good working order.

- ✓ Ensure inventories of supplies are prepared and verified.

Phase B: Hurricane Watch

- ✓ Meet with the EC and discuss priorities for action based on activities achieved to date and staff/resource availability.
- ✓ Convene a meeting with guests to inform them about the situation.
- ✓ Maintain and update the hurricane tracking map at reception area.
- ✓ Request all needed materials and supplies based on inventory provided, including potable water.
- ✓ Review and back-up computer files. Place existing hard copies, accounts, receipts, etc., in secure filing cabinets, away from areas subject to flooding or damage, or in another safe location outside the hotel.
- ✓ Make arrangements for employees to manage the facility and guests during the crisis. Develop a staff roster.
- ✓ Allow employees time to make emergency preparations at their own homes, ensuring they leave contact addresses and are aware of their possible responsibilities on the staff roster.
- ✓ Identify the employees who will most likely be unable to assist the establishment during a critical event, such as those who must take care of small children or elderly parents. Employees who are unable to assist during a critical event should be allowed to leave the establishment to return to their families.
- ✓ Recall all key personnel as deemed necessary.
- ✓ Make arrangements for those who will stay on premises.
- ✓ Distribute all key personnel as deemed necessary.

Phase C: Hurricane Warning

- ✓ Convene a meeting with EC members to start shutting down operations and relocating of guests.
- ✓ Convene a meeting with guests to inform them about the relocation to safe rooms, areas or other hotels and to inform them about preparations they have to take. Request assistance from them.
- ✓ Activate the Hotel Command Center and post the tracking map there. Ensure it has sufficient supplies and telecommunications equipment.
- ✓ Ensure that members of the EC who will stay during the hurricane take up residence in the hotel.
- ✓ Make sure that the staff settles all guests' bills where this has been adopted as established procedure.
- ✓ Ensure guests are relocated to safe rooms, areas or hotels, as needed.
- ✓ Ensure all rooms are protected and all supplies are in place.
- ✓ Shut down all normal hotel operations.

Phase D: Emergency Phase

- ✓ Remain in the Command Center with key EC members if this is the previously determined procedure.

Phase E: Recovery Phase

- ✓ Give the ”all clear” after it has been given officially by authorities.
- ✓ Hold a briefing with the entire EC and guests.
- ✓ Conduct a head count and do an initial damage and needs assessment with information from EC members.
- ✓ Ensure injured guests and staff are administered first-aid when necessary.
- ✓ Report the results of the initial damage and needs assessment to the Tourism Emergency Management Committee.
- ✓ Draft an action plan to start immediate recovery.
- ✓ Establish the hotel’s overall ability to provide services to guests, based on resource availability, including activating mutual aid agreements.
- ✓ Assess shortfalls that might prevent a return to normal operations.
- ✓ Assess and negotiate for joint use, lending, borrowing and sharing of facilities, equipment and personnel services.
- ✓ Document the incident.

Damage and needs assessment (DANA)

- ✓ Deploy staff available into a team (Hotel DANA Team) with responsibility for damage assessment (using the Damage Assessment Report, Form 8, Annex A at the back of this manual) and clean-up and salvage.
- ✓ Review the initial DANA report, developed by the DANA team.
- ✓ Photograph, videotape and document damage.
- ✓ Survey properties on basis of any priorities identified above. The assessment team or hired quantity surveyor should be accompanied by an insurance underwriter.

Clean-up and salvage

- ✓ Review and assess resources to assist in clean-up and salvage operations.
- ✓ Activate mutual aid agreements for transportation and other support for recovery activities as needed.
- ✓ Clean up facilities, using the voluntary assistance of any interested guests.
- ✓ Secure contractor services where needed.
- ✓ Request professional assistance if necessary.

Impact evaluation

- ✓ Identify disrupted telephone and power services, water shortages, damage to major transportation routes and disruption of public transportation facilities.
- ✓ Determine the projected restoration period.
- ✓ Contact employees to see the extent to which personal damage and dislocation will prevent them from resuming work.
- ✓ Assess the level of human resources needed for recovery work.
- ✓ Make decision about whether to hire temporary personnel.
- ✓ Assess the reallocation of resources and unplanned expenditures.

Community relations

- ✓ Obtain information on the extent and magnitude of damage to the overall area in which the properties are located.
- ✓ Obtain information on the government's action schedule to restore roads and utilities.
- ✓ Negotiate assistance for structural inspection and demolition, where necessary.
- ✓ Negotiate permits, as may be required, for recovery operations.
- ✓ Make known any assistance which the hotel can provide to the community, such as shelter, food, etc.

Business restoration

- ✓ Activate a plan for a temporary front desk, in the event of damage.
- ✓ Ensure that key personnel (or back-up staff) report to headquarters and provide assistance where necessary.
- ✓ Provide transportation for movement of key personnel and supplies.
- ✓ Design and implement a recovery plan for business operations, revising the marketing strategy as opportunity presents itself.
- ✓ Examine possibilities for change in marketing strategies, as in many instances, accommodation facilities for relief and rehabilitation workers may be required

Guest Relations/Services Manager

Hurricane preparedness

- ✓ Prepare hurricane emergency procedures for guests and keep them on file (see Form 4, Annex A at the back of this manual).
- ✓ Adapt guest information kits for condominiums and villas (as appropriate). Prepare a disclaimer letter for guests and keep on file.
- ✓ Find out about assessment of risk areas and safe areas or rooms in case it becomes necessary to relocate guests. (Evacuation of guests outside the hotel to designated national shelters should be considered only when this is felt to be the only appropriate course of action and if it has been agreed with the National Disaster Organization.)
- ✓ Find out from the EC about the conditions under which relocation or evacuation will be necessary, and assign responsibilities to staff members for this task.

Phase A: Hurricane Alert

- ✓ Ensure all guests are briefed by the General Manager about the situation and give them the choice to leave or to stay at the hotel.
- ✓ Ensure all guests receive a letter and hurricane information in their rooms explaining the situation and measures to be taken.
- ✓ Ensure that a tracking map is posted in the reception area.

Phase B: Hurricane Watch

- ✓ Ensure all guests are briefed by the General Manager about the situation and given the choice to leave or to stay at the hotel.
- ✓ Obtain a list of all the guests and their room numbers and give a copy to all EC members.
- ✓ Make arrangements to distribute to each guest room a memo on the current situation and a hurricane brochure instructing guests on emergency procedures as they affect them (see Form 4 at the back of this manual). Distribute these only when directed to do so by the General Manager.
- ✓ Determine the number of guests likely to be resident at landfall of the hurricane.
- ✓ Inform guests who will remain in the hotel about the safe rooms or central pre-determined areas in which they should stay during the hurricane.
- ✓ Determine the schedule of events, entertainment etc. that will be available for guests and include it in future guest memos.

Phase C: Hurricane Warning

- ✓ Ensure that all guests are briefed by the General Manager about the situation and given the choice to leave or to stay at the hotel.
- ✓ Make arrangements to distribute to each guest room a memo on the current situation and a hurricane brochure instructing guests on emergency procedures as they affect them (see Form 4 at the back of this manual). Distribute these only when directed to do so by the General Manager.
- ✓ Inform the Emergency Coordinator about guests leaving the property.
- ✓ When instructed by the Emergency Coordinator, start relocating guests to safe rooms, areas or hotels. There should be no exceptions. In the case of a hurricane strike expected at night, all guests should move before nightfall.
- ✓ Ensure remaining guests pack all their belongings and collect passports and valuables to be locked in the hotel safe.
- ✓ Ensure all rooms not designated safe areas are secured, unoccupied and locked.
- ✓ Address guests on scheduled activities for the duration of the hurricane.
- ✓ Distribute games and/or initiate the schedule of activities for guests (with assistance from volunteers).

Phase D: Emergency Phase

- ✓ Ensure all guests stay in their assigned safe rooms or areas until the Emergency Committee sends the “all clear.”

Phase E: Recovery Phase

- ✓ After the ”all clear” has been given by national authorities, perform a head count of guests in their safe rooms or areas.
- ✓ Ensure that all guests are briefed by the Emergency Coordinator about the situation and about measures to be taken.
- ✓ Request the voluntary participation of guests in the recovery activities.

- ✓ Find alternative accommodations for guests, if necessary, using mutual aid agreements.
- ✓ Liaise with tour operators and travel services and provide guests with information on possible travel arrangements, depending on the state of these services.
- ✓ Facilitate contact between guests and organizations that may be able to help them communicate with their relatives and friends, for example local embassies, the Red Cross or American Express.
- ✓ Provide guests with information on interim arrangements being made for their comfort and safety.
- ✓ Provide information to guests to reduce their anxiety and to assure them that their interests are not being neglected.

Human Resources/Staff Manager

Hurricane Preparedness

- ✓ Have an updated list and contact information for all staff members.
- ✓ Identify those members of staff who have been trained in disaster management and first-aid, and those who speak languages other than the local one.
- ✓ Organize training programs and briefings for staff about disaster management and hurricane preparedness, particularly about the hotel's specific hurricane plan and its procedures.

Phase A: Hurricane Alert

- ✓ Review the list of key staff members and submit it to the Emergency Committee.
- ✓ Recall all key personnel as deemed necessary.
- ✓ Distribute all key personnel as deemed necessary
- ✓ Make tentative arrangements for those who will stay on premises.

Phase B: Hurricane Watch

- ✓ Identify employees who will remain on property during a storm or hurricane.
- ✓ Identify the employees who will most likely be unable to assist the establishment during a critical event, such as those who must take care of small children or elderly parents. Employees who are unable to assist during a critical event should be allowed to leave the establishment to return to their families.
- ✓ Check and revise phone numbers of all department heads, supervisors and key personnel. Develop an alternate staff list, depending on who is available (i.e. not on vacation, sick, etc.).
- ✓ Make tentative arrangements with staff concerning possible rotation, and collect contact addresses for key people.
- ✓ Allow staff to make personal emergency preparations.
- ✓ Release employees who may have to go home to secure property and return.
- ✓ Arrange worker transportation as needed.

Phase C: Hurricane Warning

- ✓ Dismiss all non-essential personnel.
- ✓ Record and verify the names of staff on duty.
- ✓ Make arrangements for employees to manage the facility and guests during the crisis, and develop staff roster.
- ✓ Allow employees time to make emergency preparations of their homes, ensuring they leave contact addresses, and are aware of their possible rotation on the staff roster.

Phase D: Emergency Phase

- ✓ Ensure that all staff remaining at the hotel stay in safe rooms or areas and/or in the Command Center.

Phase E: Recovery Phase

- ✓ Call out all available staff members to assist in the recovery process.

Food and Beverage Manager

Hurricane preparedness

- ✓ Prepare regular inventories of food and beverages and know the hotel's needs during normal times.
- ✓ Brief restaurant, bar and kitchen personnel about the hurricane plan and procedures.

Phase A: Hurricane Alert

- ✓ Take inventory of canned meats, vegetables, drinks, disposable sanitary ware, etc. using Forms 5 and 6 at the back of this manual.
- ✓ Conduct a briefing meeting with kitchen and restaurant staff to identify priority tasks and delegate responsibilities according to specific time requirements.
- ✓ Report status to the Emergency Coordinator and request additional supplies as necessary.

Phase B: Hurricane Watch

- ✓ Create cycle menu based on inventory.
- ✓ Serve buffet style meals as determined necessary.
- ✓ Sterilize and fill all available water containers and store them in a safe place.
- ✓ Make tentative arrangements with staff concerning possible rotations and collect contact addresses for key people.
- ✓ Allow staff to make personal emergency preparations.
- ✓ Depending on staff and guests staying in the hotel, request food and beverages for 3-7 days.
- ✓ Secure food and beverages in a safe location.

Phase C: Hurricane Warning

- ✓ Start closing down restaurants and bars. No alcohol should be available at this point.
- ✓ Move restaurant and bar stocks and furniture to safe locations.
- ✓ Set up tea/coffee/drink stations in or near designated safe areas or safe blocks of rooms.
- ✓ Raise or remove all items on the floor in areas that are subject to flooding.
- ✓ Prepare a safe dining area and set up tables for guests.
- ✓ Arrange sterno heating with safeguard sternos. Arrange dishes and food.
- ✓ Serve sandwiches, soups, cold drinks and other easy to prepare food.
- ✓ Chill canned juices and sodas to reduce the demand for ice.

Phase D: Emergency Phase

- ✓ Ensure staff and guests have enough food in their safe rooms or areas during the impact of the hurricane.

Phase E: Recovery Phase

- ✓ Assess damage to the kitchen, restaurants, bars etc., and report to the EC.
- ✓ Inform the EC about food and beverage availability and needs.

Engineering/Maintenance Manager

Hurricane preparedness

- ✓ Assess and reduce vulnerability on a regular basis.
- ✓ Prepare shutters for all designated windows and ensure they are always in good condition.
- ✓ Ensure generators are working and in good condition and test them regularly during hurricane season.
- ✓ Conduct briefing sessions on the hurricane plan for all engineering/maintenance staff.
- ✓ Verify that telecommunications equipment is operational.
- ✓ Based on the results of the vulnerability assessment, determine whether staff and guests can remain in the hotel during the impact of a hurricane and inform the Emergency Committee.

Phase A: Hurricane Alert

Cleaning

- ✓ Clean all drains and remove debris on roofs and in drainage ditches.
- ✓ Clear or prepare rooms appropriate for storage of pool furniture.

Storage

- ✓ Check the status of safe locations where furniture, equipment and supplies will be stored.
- ✓ Prepare to store all furniture, equipment and supplies in safe locations (see Form 3 at the back of this manual).

Emergency supplies

- ✓ Inventory existing emergency supplies and detail requests for additional supplies as necessary (chainsaws, flashlights, batteries, etc.).

Stand-by generators

- ✓ Service plant and emergency generators.
- ✓ Replenish diesel fuel.
- ✓ Service all cables and oil filters.
- ✓ Test generator(s) to check output reliability.
- ✓ Provide rain and wind protection around plant.

Transport vehicles

- ✓ Check operating conditions and service all transport vehicles.
- ✓ Fill vehicles with fuel.

Phase B: Hurricane Watch

Staff

- ✓ Identify employees who will remain on property during a storm or hurricane

Lighting, cleaning, mopping

- ✓ Ensure provision of emergency lighting.
- ✓ Place mops, buckets, garbage cans, etc., in strategic locations.

Grounds

- ✓ Trim limbs from large trees or those near buildings.
- ✓ Remove coconuts from trees.
- ✓ Clear drains, including on roofs.

Water tanks

- ✓ Fill water tanks with emergency water supply.

Emergency equipment

- ✓ Service and test emergency power generators under load, prior to emergency use.
- ✓ Check conditions of emergency equipment to ensure it is operable.
- ✓ Secure emergency lighting supplies for kitchen, if a generator is not available.
- ✓ Remove and store wind breaks from fences.

Flooding

- ✓ Fill sandbags to protect areas from flooding, where appropriate.

Phase C: Hurricane Warning

Air conditioning

- ✓ Operate air conditioning and boilers until the power is shut down.

Shutters

- ✓ Install plywood or storm shutters in areas of glass or deemed most vulnerable to breakage.

Trees and shrubbery

- ✓ Trim trees.

Secure objects

- ✓ Secure all outdoor signs.
- ✓ Secure all big lighting fixtures that could be blown away or otherwise damaged.
- ✓ Secure all loose objects and store them indoors where possible (see Form 3 at the back of this manual).
- ✓ Remove all patio furniture and plant pots and put them in safe areas (see Form 3 at the back of this manual).
- ✓ Secure garbage bins.

Shutters and sandbags

- ✓ Raise emergency shutters in rooms where they exist.
- ✓ Ensure sandbags are in place in critical areas, where required.

Housekeeping and security

- ✓ Assist housekeeping staff in securing rooms.

Protection of equipment, supplies and vital records (18-12 hours before impact)

- ✓ Secure and make sure adequate supplies of polyethylene sheeting are available to cover desks and equipment as needed.
- ✓ Where necessary, prepare an area for storage of small electrical items such as calculators.
- ✓ Disconnect and store all electrical appliances that will not be used up to the point of electrical shut down.

Drains (12 hours before impact)

- ✓ Conduct a final check of drains to ensure that they are cleared, including roof drains.
- ✓ If flooding begins in critical areas, use pumps to discharge storm water.

Tennis courts and golf courses

- ✓ Remove nets from courts and flags from golf courses and store them in secure areas.

- ✓ Keep all electrical cars in a secure area.

Swimming pool

- ✓ Store pool chemicals in a safe place.
- ✓ Lower water in the pool by 2-3 feet.
- ✓ Store pool furniture that is not stored in the pool in a safe location. If need be, secure furniture with rope.

Satellite dishes, flags, sign boards, etc. (12-6 hours before impact)

- ✓ Dismantle satellite dishes, antennas, umbrellas, flags sign boards, etc.

Utilities

- ✓ Shut off gas.
- ✓ Turn off water.
- ✓ Shut off electricity. (Be aware of the time when National Authorities will shut off power in the country).

Other preparations

- ✓ Tie down all other equipment that needs to be secured.
- ✓ Load cameras with film or tape.
- ✓ Fill all car tanks with fuel.

Phase D: Emergency Phase

- ✓ If it is determined so by the EC, remain in the Command Center.

Phase E: Recovery Phase

- ✓ Conduct initial damage assessment of structure, installations and equipment and report to the Emergency Coordinator.
- ✓ Initiate clean-up on the property.
- ✓ Conduct rehabilitation of utilities within the overall recovery plan.

Damage and needs assessment

- ✓ Itemize structural and non-structural damage.
- ✓ Itemize damage to specific building equipment.
- ✓ Itemize damage to utilities and communications systems.
- ✓ Identify need for contracted services.
- ✓ Identify labor and material needs for damage repair.
- ✓ Estimate each building's repair costs.
- ✓ Summarize damage survey, including estimated repair costs.
- ✓ Develop a recovery schedule.
- ✓ Request advice on redesign or modification of vulnerable elements.
- ✓ Identify structural and non-structural weaknesses that contributed to damage.

Clean-up and salvage

- ✓ Establish a temporary dump on premises, where necessary.
- ✓ Activate clean-up and salvage team.
- ✓ Clean up facilities, with the voluntary assistance of any interested guests.

Executive Housekeeper

Hurricane preparedness

- ✓ Brief the housekeeping staff on the hurricane emergency plan and procedures.

Phase A: Hurricane Alert

- ✓ Distribute guest emergency procedures upon direction from the Emergency Coordinator (see Form 4 at the back of this manual).
- ✓ Alert staff of conditions and delegate tasks with respect to securing laundry facilities. Ensure that adequate linen, etc. are available.

Phases B & C: Hurricane Watch/Warning

- ✓ Remove all patio furniture and plant pots and place them in secure rooms.
- ✓ Begin to secure rugs (roll up) and drapes or remove them and store them in a secure place in unoccupied guest rooms.

18 hours before impact

- ✓ Ensure that emergency lighting is available in all designated safe rooms.
- ✓ Ensure all television sets, alarm clocks, radios, etc. are secured in garbage bags, taped and stored in cupboards, starting with unoccupied rooms.
- ✓ Provide guests with large garbage bags to wrap their suitcases.

8 hours before impact

- ✓ Finish securing all room furniture, draperies, etc.
- ✓ Close all louvers securely in rooms.
- ✓ Close all doors in unoccupied rooms.
- ✓ Place all small damageable items, such as lamps and bed linens, in unoccupied rooms in closets.

6 hours before impact

- ✓ Ensure all tubs are filled in guest rooms with water for guest use.
- ✓ Use old sheeting to stuff windows and under doors, to prevent rain from soaking (assisted by maintenance/ground staff).

Phase D: Emergency Phase

- ✓ If assigned to remain in the hotel, stay in the Command Center.

Phase E: Recovery Phase

- ✓ Initiate damage and needs assessment of the housekeeping department and report to the Emergency Coordinator.

Public Relations Officer/Hotel Spokesperson

Hurricane preparedness

- ✓ Design a communications plan for the hotel/resort in coordination with the Emergency Committee (see Appendix 1, Annex A).
- ✓ Contact tourism sector members, governmental organizations, the community and emergency organizations as determined by the EC and according to the communications plan.
- ✓ Provide a link between the resort or hotel and the community and international stakeholders through the communications plan.
- ✓ Keep the communications plan alive and activate it at the relevant time.
- ✓ Conduct a communications risk analysis.
- ✓ Develop a crisis communications policy.
- ✓ Designate a room or area in the property which can serve as a Crisis Communication Center. (It could be part of the hotel's Command Center.).
- ✓ Brief staff.
- ✓ Train key staff.
- ✓ Coordinate communication procedures with overseas representative(s).
- ✓ Prepare a press list.
- ✓ Develop and update an emergency contact list.
- ✓ Be familiar with the national disaster plan to know what agency to contact in case of an emergency or disaster.

Phase A: Hurricane Alert

- ✓ Participate in meetings with the EC and guests.
- ✓ Confirm contact list.
- ✓ Be a link between the hotel/resort and the national Tourism Disaster Management Committee (TDMC).
- ✓ Report to the EC about the situation at all times during the emergency.
- ✓ Prepare periodic reports about the situation at the hotel and submit them to the Emergency Coordinator and members of the TDMC as needed and according to the communications plan. Always have the approval of the Emergency Coordinator before sending out these reports.

Phase B: Hurricane Watch

- ✓ Participate in the EC meeting with guests and allow guests to ask questions and have them answered.
- ✓ Be the link between the hotel/resort and the national TDMC.
- ✓ Report to the EC on the situation at all times during the emergency.
- ✓ Prepare periodic reports about the situation at the hotel and submit them to the Emergency Coordinator and members of the TDMC as needed and according to the Communications Plan (see Appendix 1). Always have the approval of the Emergency Coordinator before sending out these reports.

Phase C: Hurricane Warning

- ✓ Be the link between the hotel/resort and the national TDMC.
- ✓ Report to the EC on the situation at all times during the emergency.
- ✓ Prepare periodic reports about the situation at the hotel and submit them to the Emergency Coordinator and members of the TDMC as needed and according to the Communications Plan.

Phase D: Emergency Phase

- ✓ Be alert to the human factor. The safety of all people is the principal concern here. However, public relations personnel should be particularly sensitive and alert to the likely emergence of symptoms of ”crisis stress” among guests and hotel personnel.
- ✓ Ensure that an event log is being kept to help in preparation of reports during the recovery phase.

Phase E: Recovery Phase

- ✓ Inform the TEMC about hotel damage and needs assessments made by the EC.
- ✓ Provide information only to pre-approved channels, including the TDMC or the National Disaster Office.
- ✓ Provide information to the media as determined by the EC. Ensure that statements to the press are accurate and brief, and without exaggeration.
- ✓ Establish and maintain a means of communication exchange with relevant public sector agencies.
- ✓ Use the media, where necessary, to provide workers with information regarding resumption of duties.
- ✓ Consult the matrix of responsibilities in the local National Disaster Plan to determine which agencies to contact in case of need.
- ✓ Develop a simple statement (what happened, how the hotel is coping) to release to the local press indicating the status of guests and property.

Financial Controller/Accounts

Hurricane preparedness

- ✓ Conduct briefing sessions on the hotel hurricane plan and procedures for all accounts staff.
- ✓ Identify vital records and make back-up copies regularly.
- ✓ Ensure all filing cabinets are water- and fire-proof.
- ✓ Establish and enforce a policy whereby all staff clear their desks and put away files, papers and documents in a cabinet drawer before leaving work.
- ✓ Identify a safe area for storage within the facility (or outside) for vital records; this area should be above ground level and away from windows and exterior walls.

Phase A: Hurricane Alert

- ✓ Identify accounts employees who will remain during a storm or hurricane.

- ✓ Start back up of vital records.

Phases B & C: Hurricane Watch/Warning

- ✓ Ensure all cash registers are put in a safe place.
- ✓ Ensure computers are unplugged and placed in a safe location.
- ✓ Ensure all valuable documents for the hotel are kept in the safe or in another safe location outside the hotel.
- ✓ Lock all cash away in the safe.
- ✓ See that all checks are secured in plastic bags and placed in a safe location.
- ✓ Secure and lock away all vital records that are not necessary for usage within the next 24 hours
- ✓ Ensure all guest bills are paid and locked away in filing cabinets.

Phase D: Emergency Phase

- ✓ If so determined in the emergency plan and by the EC, stay in the Command Center during the impact.

Phase E: Recovery Phase

- ✓ Assess damage to vital records and report to the Emergency Coordinator.

Front Desk Manager

Hurricane preparedness

- ✓ Have tracking maps and charts that could be posted in the reception area and in the Command Center.
- ✓ Be familiar with the official channels through which the National Disaster Organization will officially issue all the hurricane warning phases (alert, watch, warning, and all clear).
- ✓ Be familiar with how to track hurricanes and with TV and radio stations and websites that do so.

Phase A: Hurricane Alert

- ✓ Post a tracking map in the reception area and in the room designated as the Command Center, as instructed by the Emergency Coordinator.
- ✓ Update the weather forecast and put it on a notice board in reception.
- ✓ Instruct telephone operators to refer ALL queries on the hurricane to the Emergency Coordinator or the Public Relations Officer (see Appendix 1).
- ✓ Record information and establish and maintain contact with the National Disaster Coordinator and other local authorities responsible for warning the public.
- ✓ Ensure that all members of the EC are aware of hurricane developments.

Phase B: Hurricane Watch

- ✓ Update hurricane information on the map.

- ✓ Ensure all guests have received the procedure notification letter, placed in their rooms or hand-delivered if possible.
- ✓ Print updated lists of occupied rooms and submit them to the EC.
- ✓ Stop accepting additional check-ins when instructed to do so by the Emergency Coordinator.
- ✓ Do not accept new reservations for at least three days following the expected hurricane impact.
- ✓ Help guests who want to leave the hotel.
- ✓ Determine the number of guests likely to be remaining in the hotel at landfall of the hurricane.

Phase C: Hurricane Warning

- ✓ Update hurricane information on map.
- ✓ Ensure all guests have received the procedure notification letter, placed in their rooms or hand-delivered if possible.
- ✓ Instruct staff to be vigilant to avoid the possibility of guests leaving without paying their bills.
- ✓ Request guests to pack their belongings and prepare their passports and valuables to be locked in the safe.
- ✓ Provide Guest Services and the General Manager (EC) with an accurate and totally up-to-date guest list.
- ✓ Lock all money and valuables in the safe.
- ✓ Ensure potted plants and furniture from the lobby are placed in a safe location.
- ✓ Back up information from computers.
- ✓ Put computers in plastic bags and store them in a safe location.

Phase D: Emergency Phase

- ✓ If determined by the emergency plan and by the EC, stay in the Command Center during the impact.

Phase E: Recovery Phase

- ✓ Assess damage to reception and report to the EC.
- ✓ Re-initiate operations at reception as directed by the EC.

Security Manager/Chief of Security

Hurricane Preparedness

- ✓ Check all first-aid kits and their respective locations
- ✓ Ensure all telecommunications equipment is functioning at peak efficiency
- ✓ Ensure flashlights are available and working

Phase A: Hurricane Alert

- ✓ Inform all security personnel about their assigned duties.
- ✓ Assist in securing all important files and equipment.
- ✓ Establish the necessary rotation schedule for backup.

- ✓ Secure lighting for immediate use.
- ✓ Secure all important files, equipment and data.
- ✓ Check that telecommunications equipment is available and in good working order.

Phase B: Hurricane Watch

- ✓ Establish security posts.
- ✓ Take all steps necessary to ensure safety of all personal property.
- ✓ Assist housekeeping personnel in securing rooms.
- ✓ Assist in securing property and transporting food and beverage supplies, placing sand bags in appropriate places, etc.
- ✓ Distribute telecommunications equipment to EC members.
- ✓ Assign security officers to patrol the area to maintain calmness and control.

Phase C: Hurricane Warning

- ✓ Check and ensure that all rooms not designated safe areas are secured, unoccupied and locked.
- ✓ Ensure that all stored supplies and furniture are stored in secure areas.
- ✓ Determine what security personnel will remain during the impact of the hurricane.

Phase D: Emergency Phase

- ✓ Ensure that all security personnel remain indoors during storm conditions, for safety reasons.
- ✓ Be on the alert for damage in the area and record it.
- ✓ Be on the lookout for intruders who might take advantage of the uncertain situation.

Phase E: Recovery Phase

- ✓ Walk about the premises to ensure that it is safe and there are no dangers or threats to the staff, guests or property.
- ✓ Check all guest rooms.
- ✓ Escort any casualties to and from the property.
- ✓ Assist in assessing damage and report to the EC.
- ✓ Escort any emergency services personnel or vehicles to various locations on property

Environmental Officer

Hurricane preparedness

- ✓ Advise the EC on hurricane-related prevention measures and environmental matters on the property.

Phases A, B & C: Hurricane Alert/Watch/Warning

- ✓ Ensure that hurricane preparedness measures do not impact negatively on the environment.

- ✓ Ensure at all times that air, water, soil, flora and fauna are, as far as possible, taken care of and protected during the emergency.

Phase D: Emergency Phase

- ✓ If determined by the emergency plan and the EC, stay in the Command Center during the impact.

Phase E: Recovery Phase

- ✓ Identify the effect of the event on the environment within which the property is located.
- ✓ Assess damage to the environment and report to the Emergency Coordinator.
- ✓ Ensure that the environment is restored after any hurricane-related damage.

Loss-Reduction Techniques

As part of the creation and implementation of an effective hurricane preparedness and response plan, hoteliers should establish a medium- or long-term plan for upgrading the physical structure of all buildings on the property, to allow them to withstand the known hazards of hurricanes. The ultimate goal of this plan is to reduce the element of surprise by providing buildings and structures with predictable performance at affordable costs. Upgrading infrastructure can also help reduce insurance premiums, as insurance and reinsurance premiums in the Caribbean are becoming more expensive and difficult to obtain for facilities that are unable to prove their structural integrity.

This section includes information on the potential risks that hurricanes pose to building structures, acceptable criteria for structural design, guidelines for vulnerability assessments, and procedures for reducing the vulnerability of existing installations, including routine and preventative maintenance, and retrofitting.

How hurricanes affect buildings

Hurricanes subject buildings to winds from several different directions, heavy rains and, in some cases, storm surge. Hotels and other buildings must therefore be designed to resist all of these different pressures**:**

- **Wind:** Wind damage to structures is caused by wrenching and bending forces from gusting winds and the rapid increase in wind force as wind speed increases. With a doubling in wind speed, the wind force on a structure increases four times. Wind striking a building produces pressure that pushes against the building on the windward side, and suction that pulls the building on the leeward side. Failure may occur when the external pressure and suction on the wall combine to push and pull the building off its foundation. If the building is not securely tied to its foundation, and the walls cannot resist the push/pull forces, the structure tends to collapse, starting at the roof, with the building leaning in the direction of the wind. Hurricane winds can also lift the roofs off of buildings. In most cases, this uplifting effect is the result of the difference in the speed of the wind over the roof. Lower pressures on the leeward side can cause the entire roof to lift up off the walls. Wind entering the structure through broken or open windows and doors can add to this lifting effect.

- **Rain:** The torrential rains that result from hurricanes can intensify flood damage to those facilities affected by storm surge, and can also cause flooding in non-coastal areas. The indirect effects of heavy rains can include power outages and saturation of the interior of buildings with salt and water.

- **Storm surges:** Surges can cause great damage to facilities, even if the hurricane is at some distance away from the coast. The force of winds can push waves toward the shore, causing significantly higher water levels at the coastline. The resulting flooding can cause severe damage to properties in areas that are directly hit by hurricane-force winds and can impact properties even in areas where wind damage is negligible.

Quality control in construction

After a disaster, **avoidable structural damage** often emerges as a major problem for hotels and other facilities. Such damage is mainly due to inadequate control of quality at all stages of the building process, from design and detailing through to construction and maintenance.

A review of damage to buildings from hurricanes in the Caribbean has shown that **roof failure** is the primary cause of problems, leading in some cases to complete collapse of the walls. Generally, these failures can be attributed to the use of lightweight roofing material, such as 26-gauge galvanized sheeting or aluminum sheeting. In some cases, roofs remained partially intact but the damage to windows, doors and internal partitions was significant. Although damaged facilities must be replaced as quickly as possible after hurricane damage has occurred, especially in those cases where the hotel has guests, it is disturbing to note that, in many cases, reconstruction has been based on the same flawed design concepts using the same materials which led to the failures.

Formal quality assurance procedures

The Regulatory Environment

To ensure sound construction of hotels and other infrastructure, it is important to comply with required building codes and standards. Implementation of a good code with appropriate standards is likely to lead to a reduction in the cost of safe buildings by encouraging more appropriate conceptual designs.

The Caribbean Uniform Building Code (CUBiC), for instance, contains building standards which, if properly used, will reduce the vulnerability of structures to natural hazards. The Code includes sections on administration, structural design requirements, and occupancy, fire safety and public health requirements.

The system of check or review consultants (*bureaux de contrôle*), routinely used in French territories and with variations in Colombia and in Canada (British Columbia), has been used on several major projects in the Commonwealth Caribbean, principally at the instigation of catastrophe-insurance providers. Other building codes, notably those of the Organisation of Eastern Caribbean States (OECS) and Turks and Caicos, also mandate the use of a special inspector for the review of plans and construction for important buildings. The review consultant should not be otherwise involved with the project and should report to the owner on all critical stages of the project.

The technical standards in the OECS Building Codes are based on the CUBiC standards, but building regulation in each territory is different. Two OECS countries have approved or passed legislation mandating the use of the Code.

should be adopted to ensure that buildings are designed, constructed and rebuilt in accordance with relevant standards and particularly that proper detailing has been done.

Any new building should conform to the **highest standards of design and construction**, to ensure they are most able to withstand the pressures of hurricane winds, rain and water. In general, all parts of the building, from doors to roofs to cladding, should be designed to withstand high wind pressure, including suction. All necessary permits should be obtained in advance from the local authorities, and detailed drawings and specifications should be developed to cover all aspects of the construction. All people involved in the construction process should be sufficiently experienced and qualified in hurricane and flood resistance, and all materials and techniques employed should provide adequate strength for withstanding potential hazards.

See Appendix 2, Annex B for detailed criteria for new construction.

Fire Prevention Plan

A fire prevention plan should be a part of any review and assessment of a tourism structure. The plan should include a review of the fuel sources (hazardous or other materials) on site that could initiate or contribute to the spread of a fire in an emergency situation, as well as the building systems that are in place to control the ignition or spread of a fire. This plan should be in writing and made available to all employees for periodic review. An employer should inform employees upon initial hiring of the fire hazards to which they are exposed, and review with each employee those parts of the FPP necessary for self-protection. At a minimum, an FPP should include:

- A list of major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.
- Procedures to control accumulations of flammable and combustible waste materials.
- Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
- The name or job title of employees responsible for the control of fuel source hazards.

Structural vulnerability audits

Structural vulnerability audits should be conducted **annually** – just before hurricane season, in March or April – by a qualified engineer, in collaboration with a geotechnical engineer. The Field Evaluation Method, which uses data obtained from visual inspections of all buildings included in the audit, is a widely used method to assess vulnerability. This method provides an assessment based on past experiences of buildings with similar geometry, stiffness characteristics, material types, connections and anchorages. In the absence of subsoil information, the method also assumes average soil conditions and effects.

The Field Evaluation Method assigns a subjective rating (good, fair, poor) to the various main characteristics of a building, such as symmetry and quantity of resisting elements, anchorage or diaphragm stiffness. The individual ratings are

then combined into a composite rating that provides the final assessment. The audit should evaluate all parts of the building – from foundations, roofs and framing to walls, windows and doors – as well as grounds and external areas around the building. (See Appendix 3 for detailed information on what to assess when conducting a structural vulnerability audit.)

Maintenance as a mitigation tool

To withstand the forces of a hurricane, a hotel building must be maintained in a reasonable condition. Every disaster mitigation plan should include a maintenance plan to keep buildings and equipment in the best of form for normal use, given their original design and materials. The lack of a properly organized, funded, staffed and implemented maintenance system may render any other disaster mitigation plans insufficient, as roofs, walls and equipment are much more vulnerable to failure if they are normally at near breakdown or any level of technical deficiency.

Deferred maintenance is also counter-productive and costly, as major renovations will be inevitable if the existing structures are not kept up and are much more costly than the annual maintenance costs. To ensure that a regular maintenance system is most effective, hotel owners should make every effort to bring their buildings and plant up to a reasonable standard to start.

Proper maintenance can help ensure that the facility can function at its designed level and for the normal life span of the building and plant and can resist the effects of extreme natural events such as hurricanes, floods, and earthquakes without damage to its occupants and with minimal repair or rehabilitation necessary after the passing of the event. A well-implemented maintenance system can also help promote a good relationship with the insurance industry and enable a facility to benefit from more favorable catastrophe-insurance premiums.

Components of a maintenance program

All maintenance activities should be systematized using the **"anticipate-and-prevent approach"** rather than the "react-and-cure approach" for all equipment and structural components of the building. While repair, rather than prevention of the need to repair, is often considered to be the main purpose of a maintenance system, it is actually much more efficient and cost-effective to prevent problems before they occur. For example, the scheduled oiling of door hinges and window operators or the painting of exterior wooden members can prevent failure of the equipment or rotting of the wooden members which might require replacing the whole window or door.

Each maintenance program should include **semi-annual reviews** to check for implementation of the initial vulnerability audit, identify new deterioration or previously overlooked problems, benefit from new knowledge, and review maintenance procedures. Each review should include careful inspection of foundations, roofs, claddings, decks, building fixtures and fittings for signs of structural failures. Any problems should be repaired immediately. Inside the building, electrical installations should be periodically inspected for signs of wear and loose connections that could lead to malfunctioning, and repaired. If necessary, the building should be treated for termite infestation.

On the grounds of the property, external drainage systems, rainwater disposal systems and manholes should be kept free of debris and maintained to ensure that water flows feely and discharges away from foundations. Ground surface gradients should be checked and maintained, to ensure that water runs off away from the building.

Along the coastline, piling on wharfs, piers and jetties, sea walls, gabions and groynes should also be inspected for signs of structural failure or instability and repaired as needed.

Planning and implementing a maintenance program

A comprehensive maintenance system for a hotel or other tourism establishment should include an **organizational structure** with clearly defined duties and responsibilities, an operation maintenance manual and procedures for buildings and equipment, and a management information system to track and produce reports on the program's budget, stocks of supplies, inventories of equipment (both numbers and condition), staffing requirements and other administrative details..

All staff responsible for maintenance should be trained to carefully inspect any parts of the building and plant in their care and to record any problems or deficiencies. **Reporting** is an essential part of the maintenance system. A sample reporting format is shown in Form 9 (see Forms Annex), though you may wish to devise a new form that is more responsive to the particular needs of you hotel or facility. Keep in mind, however, that the simpler the form, the better will be the chances of having it properly filled out and submitted each month.

Several different hotel employees should be given specific assigned responsibilities for maintenance. Although major repair or renovation projects should be specifically authorized by the hotel manager or assistant manager, depending on the budget requirements, normal maintenance and minor repairs can be carried out by in-house staff without specific authorization. The chain of command for maintenance includes:

- The **hotel assistant manager**, who is responsible to the **owner** for the efficient operation of the hotel, including general staff matters, buildings,

equipment and grounds, and for the expenditures authorized in the annual estimates;

- The **maintenance superintendent**, who receives, through a delegation of authority from the **hotel manager**, the responsibility for the maintenance of all buildings and plant and for providing advice to the hotel manager on capital requirements and on the condition of the buildings and plant;
- **Technical staff**, including carpenter, plumbers, electricians and painters, as required, who report to the hotel manager or maintenance superintendent; and
- The **gardener and cleaning staff**, who report to the hotel's assistant manager.

Please see Appendix 4 for tables of suggested frequencies and responsible parties for building maintenance.

Annual maintenance budget

Hurricane mitigation and planning should be included in all budget preparation and planning activities, as it makes financial sense to build appropriate maintenance, repair and replacement costs into annual budgets.

The maintenance budget for a hotel with heavy usage will generally be about 4 percent of the current value of the building and equipment, assuming that facilities are in good condition. For hotels, this value will be about US$150,000 per guest room, which includes the cost of common and administrative areas but does not include the cost of emergency electricity equipment, water storage or normal furniture and equipment. Thus, the annual budget allocation for maintenance should be no less than about US$6,000 per guest room, plus an allocation of about 8 percent of ff&e (furniture, fixtures & equipment) for maintenance of those facilities. For smaller hotels, of less than 50 rooms, this number may be too small, as the cost of infrastructure maintenance would be proportionately higher per room than that for a larger hotel.

Regardless of the size of the facility, the maintenance budget should include provisions for:

- ✓ Inspecting and maintaining metal and wood works;
- ✓ Provisions for regular testing and maintenance of equipment that is only occasionally used (stand-by equipment);
- ✓ Repairs leading to moderate improvements;
- ✓ Replacements leading to significant improvements (repair versus replacement is an economic issue which should be addressed at this point); and
- ✓ Regular staff training in the use, operation and maintenance of equipment.

Retrofitting

Retrofitting for hurricane resistance can be relatively easy and inexpensive, especially if the building is adequately maintained.

Roofs are usually prime targets for retrofitting. Light-weight corrugated roof sheeting is particularly vulnerable because of inadequate fastening systems. Better fasteners are now available, such as the Australian cyclone washer and the French-Caribbean fastening systems for trapezoidal-profile sheeting. Overhanging eaves experience very high uplift loads from the wind; these should be reduced.

Hotel owners may wish to have the conventional glazing in large **windows and doors** replaced with polyvinyl butryal (PVB) laminated glass, which comes in different thicknesses and with different numbers of laminates to suit different conditions. The building owner may also install shutters that have an everyday function of shading, as well as protection of windows in times of storms.

Costs of retrofitting

The costs of retrofitting depend on the conditions of the subject properties. However, work is now being done on the retrofitting of various facilities and some estimates of costs are available.

An unpublished study now underway on buildings and other infrastructure projects in Jamaica, St. Lucia and St. Thomas[7] showed that, for hurricane-damaged buildings, an additional cost of **less than 2 percent** of the original construction cost would have prevented the damage. For the infrastructure projects, which suffered much worse hurricane damage than the buildings, an added expenditure of about 11 percent would have prevented disaster. Other studies have shown that amounts of from 1 percent to 2.2 percent of increased construction costs were needed for strengthening electricity buildings in Barbados and a hospital in Dominica.

[7] The Economics of Disaster Mitigation in the Caribbean: Quantifying the Benefits and Costs of Mitigating Natural Hazard Losses. P. 66. IDB, IMF, OAS, and WB Working Paper. August 2005.

Additional Protocols for Other Natural Hazard Emergencies – Earthquakes, Tsunamis and Thunderstorms

Although hurricanes are the most likely natural hazard to pose a threat to tourism establishments in the Caribbean, several other situations may cause damage and disruption. This section discusses additional emergency response actions to take for three other types of emergencies caused by natural hazards– **earthquakes, tsunamis and thunderstorms**.

Earthquakes

Preventative actions to take before an earthquake strikes

- ✓ During building construction, the following details should be taken into consideration:
    a. Adding steel bracing to frames
    b. Strengthening columns and building foundations
    c. Replacing non-reinforced brick filler walls
- ✓ All electrical appliances, utility connections, gas pipes, etc. should be continuously monitored and repaired if necessary
- ✓ If possible, install flexible pipe fittings to avoid gas or water leaks as flexible fittings are more resistant to breakage.
- ✓ Establishment should be inspected for items that can fall over, break, move or cause additional damage during an earthquake. These items should either be secured or removed if deemed necessary.
- ✓ Large appliances, including stoves, refrigerators etc should be bolted down or safely secured to walls
- ✓ In guest accommodations, decorative equipment such as shelves, mirrors, and large picture frames should be firmly secured
- ✓ Overhead light fixtures, ceiling fans etc should be firmly mounted/anchored to the walls at the time of installation
- ✓ Have an evacuation plan ready and establish procedures on determining whether an evacuation is necessary
- ✓ In a situation where an evacuation may not be necessary, staff should be aware of 'safety spots' within the establishment. These may include: strongly supported or load bearing doorways, inside corners of buildings, areas in the facility away from exterior walls and windows
- ✓ Earthquake drills should be conducted regularly.
- ✓ Copies of building design drawings, floor plans, layouts of grounds and outdoor spaces etc should be kept handy to determine structural integrity, facility's safety after an earthquake

During an earthquake

There are a number of actions that can be taken, even while an earthquake is happening, that will reduce the chances of personal injury. Tourism establishments should ensure that their staff and customers are familiar with such actions, in case of an earthquake:

- ✓ Take cover under a heavy desk or table, which can provide you with air space if the building collapses. If you get under a table and it moves, try to move with it.
- ✓ Inner walls or door frames are the least likely to collapse and may also shield against falling objects. If other cover is not available, go to an inner corner or doorway, away from windows or glass panels.
- ✓ Stay away from glass and hanging objects, cabinets or other large items that could fall. Watch for falling objects, such as bricks, light fixtures, wall hangings, high shelves, and cabinets with doors that could swing open.
- ✓ Grab something to shield your head and face from falling debris and broken glass.
- ✓ If the lights go out, use a battery-operated flashlight. Don't use candles, matches, or lighters during or after the earthquake. If there is a gas leak, an open flame could lead to an explosion.
- ✓ If you are in a cooking area, quickly turn off the stove and take cover at the first sign of shaking.

In buildings that are **two stories or higher**:

- ✓ Get under a desk and stay away from windows and outside walls.
- ✓ Stay in the building.
- ✓ DO NOT use the elevators.

In **crowded indoor public places**:

- ✓ Do not rush for the doorways; others will have the same idea.
- ✓ Move away from display shelves containing objects that may fall.
- ✓ If you can, take cover and grab something to shield your head and face from falling debris and glass.

In **outdoor locations:**

- ✓ Move away from buildings and utility wires. The greatest danger from falling debris is just outside doorways and close to outer walls.
- ✓ Once in the open, stay there until the shaking stops.

After an earthquake

Once the initial shaking has ended, there may be a series of additional earth movements, or "aftershocks." Although most of these will be smaller than the main earthquake, some may be large enough to cause additional damage or bring down weakened structures. Because other after-effects of an earthquake can include fires, chemical spills, landslides and tidal waves, be sure to monitor

your battery-operated radio or TV for additional emergency information. The following emergency response actions and precautions can help minimize damage and injury and speed recovery after an earthquake

- ✓ Check yourself and others for **injuries:**
  - Do not attempt to move injured or unconscious people unless they are in immediate danger from live electrical wires, flooding, or other hazards. Internal injuries may not be evident, but may be serious or life-threatening.
  - If someone has stopped breathing, call for medical or first aid assistance immediately and begin CPR if you are trained to do so.
  - Stop a bleeding injury by applying direct pressure to the wound.
  - If you are trapped, try to attract attention to your location.

- ✓ Check **utilities,** including gas, electrical and water lines, for damage:

  If you smell gas: (1) open windows; (2) shut off the main gas valve; (3) do not turn any electrical appliances or lights on or off; (4) go outside; (5) report the leak to the attraction command center; and (6) do not reenter the building until a utility official says it is safe to do so.

  If electric wiring is shorting out, shut off the electric current at the main box.

  If water pipes are damaged, shut off the supply at the main valve.

- ✓ Check to see if **sewage lines** are intact before using bathrooms or plumbing.

- ✓ Do not touch **downed power lines** or objects in contact with downed lines. Report electrical hazards to the authorities.

- ✓ Immediately clean up spilled medicines, drugs, flammable liquids, and other potentially **hazardous materials**.

- ✓ Stay off all **telephones** except to report an emergency. Replace telephone receivers that may have been knocked off by the earthquake.

- ✓ Stay away from **damaged areas**. Your presence could hamper relief efforts, and you could endanger yourself.

- ✓ Coordinate and cooperate fully with **public safety officials**. Respond to instructions from police, fire fighters, emergency management officials, and relief organizations, but do not go into damaged areas unless assistance has been requested.

Tsunamis

Tsunamis, which are also known as seismic sea waves and sometimes mistakenly called “tidal waves”, are a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. A tsunami can move hundreds of miles per hour in the open ocean and smash into land with waves as high as 100 feet or more.

From the area where the tsunami originates, waves travel outward in all directions. Once the wave approaches the shore, it builds in height. The topography of the coastline and the ocean floor will influence the size of the wave. There may be more than one wave and the succeeding one may be larger than the one before. That is why a small tsunami at one beach can be a giant wave a few miles away.

All tsunamis are potentially dangerous, even though they may not damage every coastline they strike. A tsunami can strike anywhere along any coastline, even if the region has never been affected by a tsunami before.

Earthquake-induced movement of the ocean floor is the most frequent cause of tsunamis. If a major earthquake or landslide occurs close to shore, the first wave in a series could reach the beach in a few minutes, even before a warning is issued. Areas are at greater risk if they are less than 25 feet above sea level and within a mile of the shoreline. Drowning is the most common cause of death associated with a tsunami. Tsunami waves and the receding water are very destructive to structures in the run-up zone. Other hazards include flooding, contamination of drinking water, and fires from gas lines or ruptured tanks.

Before and During a Tsunami

If a tsunami is likely in your area, the following actions can help to minimize the chance of injury:

- ✓ **Listen to your radio** to learn if there is a tsunami warning or if an earthquake occurs and you are in a coastal area.
- ✓ **Move inland to higher ground** immediately and stay there.
- ✓ **Stay away from the beach.** Never go down to the beach to watch a tsunami come in. If you can see the wave you are too close to escape it.

CAUTION: *Noticeable recession in water away from the shoreline is nature's tsunami warning and should be heeded. In such cases, move immediately away from the shoreline.*

After a Tsunami

Following these guidelines immediately after a tsunami can help minimize the chance of personal injury or damage from the event:

- ✓ **Stay away from flooded and damaged areas** until officials say it is safe to return.
- ✓ **Stay away from debris in the water**; it may pose a safety hazard to boats and people.
- ✓ **Save yourself - not your possessions.**

Emergency Kit for Earthquakes and Tsunamis

- ☐ First-aid kit, including:
- ☐ Drugs/Medications: Hydrogen peroxide to wash and disinfect wounds; antibiotic ointment; individually wrapped alcohol swabs, aspirin and non-aspirin tablets; prescriptions and any long-term medications (keep these current); diarrhea medicine; eye drops.
- ☐ Dressings: Bandage strips; ACE bandages; rolled gauze; cotton-tipped swabs; adhesive tape roll.
- ☐ Other first-aid supplies: First-aid book; scissors; tweezers; thermometer; bar soap; tissues; sunscreen; paper cups; pocket knife; small plastic bags; safety pins; needle and thread; instant cold packs for sprains; sanitary napkins; splinting materials.
- ☐ Tools and supplies: Axe; shovel; broom; screwdriver; pliers; hammer; adjustable wrench; rope for towing or rescue; plastic sheeting and tape.
- ☐ Items for safety and comfort: Sturdy shoes that can provide protection from broken glass, nails and other debris; gloves (heavy and durable for cleaning up debris); candles (do not use if you smell gas); waterproof matches (do not use if you smell gas); change of clothing; knife; garden hose (for siphoning and firefighting); tent; recreational supplies for children and adults; blankets or sleeping bags; portable radio, flashlight and extra batteries; essential medications and eyeglasses; fire extinguisher (multipurpose, dry chemical type); food and water for pets; toilet tissue.
- ☐ Survival kit for your staff: Food (nonperishable – nutrition bars, trail mix, etc.); bottled water; jacket or sweatshirt; pair of sturdy shoes, flashlight with fresh batteries; battery-operated radio with fresh batteries; essential medications; blanket; small first-aid kit; extra pair of eyeglasses and/or contact lens solution; whistle or other signaling device.

Thunderstorms and Lightning

Thunderstorms are dangerous natural hazards with the potential to cause injury to both people and property. Every thunderstorm produces lightning, which is responsible for thousands of deaths around the world each year. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms. Other associated dangers of thunderstorms include tornadoes, strong winds, hail and flash flooding. Flash flooding is responsible for more fatalities than any other thunderstorm-associated hazard.

Dry thunderstorms that do not produce rain that reaches the ground are dangerous, as well. Although the falling raindrops evaporate, lightning can still reach the ground and start wildfires.

Before and During a Thunderstorm

To **prepare** for a thunderstorm:

- ✓ Remove **dead or rotting trees and branches** that could fall and cause injury or damage during a severe thunderstorm.
- ✓ Remember the **30/30 lightning safety rule**: Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder. Stay indoors for 30 minutes after hearing the last clap of thunder.

If a thunderstorm **is likely** in your area:

- ✓ **Postpone outdoor activities**.
- ✓ Get **inside a building, or hard-top automobile** (not a convertible). Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.
- ✓ Remember, **rubber-soled shoes and rubber tires provide NO protection** from lightning. However, the steel frame of a hard-topped vehicle provides increased protection **if you are not touching metal**.
- ✓ **Secure outdoor objects** that could blow away or cause damage.
- ✓ **Shutter windows and secure outside doors**. If shutters are not available, close window blinds, shades, or curtains.
- ✓ **Avoid water activities**. All marine tourist facilities should postpone activities until the storm is clearly out of the area. Water conducts electricity.
- ✓ **Do not use a corded telephone**, except for emergencies. Cordless and cellular telephones are safe to use.
- ✓ **Unplug all electrical items**. Power surges from lightning can cause serious damage.
- ✓ Use your **battery-operated NOAA Weather Radio** for updates from local officials.

During a thunderstorm, **avoid the following:**

- ✓ **Natural lightning rods** such as a tall, isolated tree in an open area.
- ✓ **Hilltops, open fields, the beach, or a boat** on the water.
- ✓ **Isolated sheds** or other small structures in open areas.
- ✓ Anything **metal.**

If you are on **open water** during a thunderstorm, get to land and find shelter immediately.

If you are anywhere you feel your **hair stand on end** (which indicates that lightning is about to strike):

- ✓ Squat **low to the ground** on the balls of your feet.
- ✓ Place your **hands over your ears and your head between your knees**.
- ✓ Make yourself the **smallest target possible** and **minimize your contact with the ground**.
- ✓ **DO NOT lie flat on the ground**.