

2<sup>nd</sup> Edition January 2019

# Hurricane Management Guide for Hotel and Resorts

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*A management guide for preparing, fighting and surviving hurricanes to ensure the protection of life, property and the environment.*

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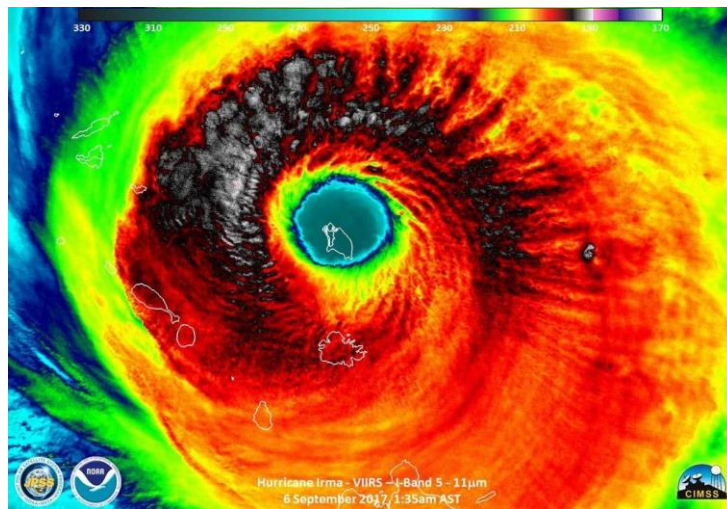
Hurricane Preparedness Expert for Hurricane Irma - Sint Maarten September 2017

Consultant for Lloyds Cargo Underwriters, Hurricane Joaquin – Maritime Disaster “S.S. EL FARO”

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Hurricane Irma – Category 5, Record Wind Speeds



Devastation after a Category 5 Hurricane

# 1 SECTION 1 - GENERAL INTRODUCTION

## 1.1 PURPOSE

The purpose of this guide is to assist in the planning, preparation, fighting, survival and aftermath for hurricanes that may impact hotels and resorts in order to prevent loss of life, severe accidents and to minimize damage to property and the environment.

## 1.2 PLANNING AND PREPARATION

This guide is intended to provide:

- A methodology for planning and preparing for a hurricane.
- Identify the known hazards and establish and implement controls.
- To help monitor hurricane movement and assess the likelihood of impact.
- An organizational structure and support system.
- How to effectively communicate to guests, staff, external organizations and the media.
- The importance of building external relationships with other hotels, resorts, other organizations and local and national governmental bodies.
- The importance of staff certification, training and drills.
- Hurricane equipment, stores and provisions.
- Prepping the hurricane center/shelter and surviving the hurricane.
- The importance of sanitation and hygiene.
- The steps required to maintaining a refuge and evacuating guests and staff.
- A basic overview of the psychological effects of experiencing a natural disaster.

This guide is an overview and does not go into minutiae detail on every single point. It is to be used as a 'best practice only' guide. It does not contain or follow any local, national or international statutory or regulatory requirements. If in any doubt as to planning and preparation for hurricanes, readers are advised to contact their local and/or national authorities.

### 1.3 ABOUT THE AUTHOR

I was employed by the Maho Group based in Sint Maarten at the Maho Beach Resort as a hurricane preparedness consultant approximately 6 days before hurricane Irma hit. I was proud to be part of a team that led 375 guests and staff to safety without a single injury or death, which included a full and successful evacuation.

I am a Master Mariner holding a United Kingdom, unlimited tonnage, deep sea Masters License. I have spent 27 years at sea predominately on naval vessels, cargo and cruise ships and then came ashore as a consultant in 2015.

I have numerous qualifications and certifications, such as Crowd Control, Crisis Management, Advanced First Aid, Advanced Fire Fighting, Personal Survival, Damage Control and Train the Trainer.

I started my career with the Royal Fleet Auxiliary Service and have since worked for British Petroleum, Windstar Cruises, Stolt & Nielsen, P&O, Stena Line, Thomson Cruises and Crystal Cruises.

In my consultancy work I am mainly employed by insurance underwriters and maritime lawyers from all over the world. I specialise in weather related incidents such as hurricanes.

During hurricane Irma I realized that more planning and preparation could be done in order to save lives, safeguard property and protect the environment with regards to the hotel and tourist industry. I therefore wrote this guide in the aftermath of Irma and I sincerely hope that hotels and resorts will find it invaluable and adopt the guide into their safety management system.

I live in London and Houston and I am married with one daughter.



Captain Nathan Mills with Hotel Guest and Friend for Life

This guide is yours for free.

## 2 SECTION 2 - BASIC KNOWLEDGE OF HURRICANES

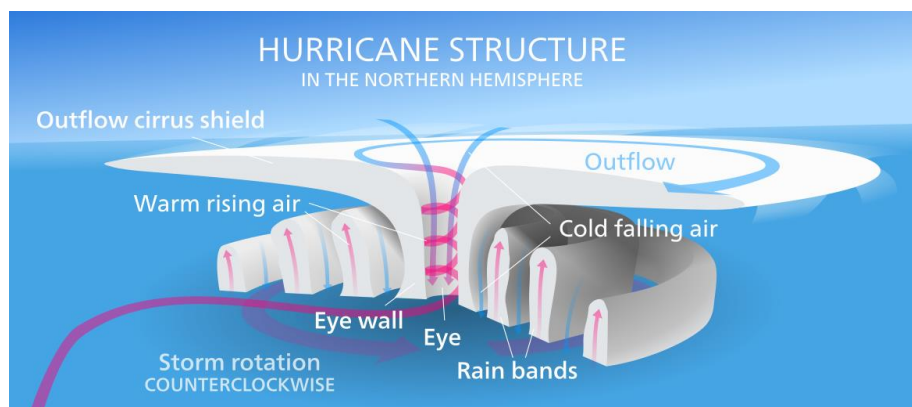
### 2.1 WHAT IS A HURRICANE?

A hurricane is a tropical cyclone. Depending on its location and strength tropical cyclones are categorised as hurricanes, typhoons, tropical storms, cyclonic storms, tropical depressions or a cyclone. A hurricane is a tropical cyclone, which occurs in either the Atlantic Ocean or north-eastern Pacific Ocean.

For the purpose of this guide the words ‘tropical cyclone’ are replaced by the word ‘hurricane’.

A hurricane is a rapidly rotating storm system characterized by a low-pressure center, strong winds and thunderstorms that may produce heavy rain.

Hurricane winds move in a circle, whirling round their central clear eye, with their winds blowing counter-clockwise in the Northern Hemisphere.



Source – Kelvinsong – own work, CC – <http://commons.wikimedia.org/w/index.php?curid=23226142>

The Atlantic hurricane season is from June 1<sup>st</sup> to November 30<sup>th</sup>.

At the center of a mature hurricane, there is a clear ‘eye’. Weather in the eye is normally calm and free of clouds. The eye is normally circular in shape, and is typically 30–65 km (19–40 mi) in diameter, though eyes as small as 3 km (1.9 mi) and as large as 370 km (230 mi) have been observed.

The cloudy outer edge of the eye is called the ‘eyewall’. The eyewall typically expands outward with height, resembling an arena football stadium; this phenomenon is sometimes referred to as the stadium effect. The eyewall is where the greatest wind speeds are found, air rises very rapidly, clouds reach their highest altitude, and rainfall is the heaviest. The heaviest wind damage occurs where a hurricane’s eyewall passes over land.

The predicted path of a tropical cyclone will depend on whether it is in the northern or southern hemisphere. A ‘Cape Verde’ hurricane (Northern Hemisphere, typical Atlantic hurricane) will

normally curve to the North West after a period of time, however it is not uncommon for them to curve, albeit for a short period of time, to the south west or continue in a straight path.

A hurricane will normally proceed at a certain speed across the face of the planet. The speed of a hurricane and its size are not always related and therefore the observer should not rely on that the bigger it is the greater the speed of the actual hurricane or the worse the wind speed will be. It is also acknowledged that some hurricanes will stall and maintain a position, which can be particularly concerning if that position is over a populated area of land.

Wind speed is a crucial factor in determining destructive capability. The observer should not compare the actual size of the hurricane as a determining factor of how strong the winds will be.

Hurricanes are known to increase in intensity in a very short period of time. Further they can dissipate equally as fast. Therefore, a hurricane can be considered to have unpredictable elements, which even the best meteorologists cannot forecast with absolute certainty.

Wind speeds are normally greater towards the eye of the hurricane. The greatest wind speeds are recorded in the actual eye **wall** (not the eye). The winds inside the eye wall of the hurricane are considered by many to be virtually non-existent. While this is maybe true for a mature hurricane it is not true for younger or older hurricanes. In the initial formation or eventual collapse of a hurricane, winds will be present within the actual eye area. So, it should be noted by the reader that extreme caution should be given to the generally held belief that the eye represents the 'calm of the storm'.

Not all hurricanes have the presence of heavy rain, but for the sake of safety, we must take the opinion that every hurricane will produce an extremely large quantity of rain.

It should be noted that the size of the eye is different from one hurricane to the next. Further the position of an observer within the eye in respect to the position and proximity of the dangerous eye wall clearly prohibits any photographic or exploratory opportunities. The latter is stated as many people have ventured out from their secure bunker in order to observe the eye only to have been killed unaware by the rapidly approaching and highly dangerous eye wall.

It is also not uncommon for hurricanes to have tornadoes within the eye wall. Hurricane Irma was recorded as having 3 tornadoes present within the eye wall further increasing its destructive power.

If an observer is unfortunate enough to be in the path of the eye, they will experience the front side first and then the back side of the eye. For the purpose of this guide, without going into the

minutiae of which particular compass sector of the eye wall is most dangerous, we will take the opinion that both the front side and back side of the eye wall are equal in wind speed velocity.

## 2.2 DESTRUCTIVE CAPABILITY

The Saffir-Simpson Scale is used to determine the strength and destructive force of hurricanes.

There are 5 categories.

### 2.2.1 CATEGORY 1

Range of wind speed: 74-95 mph / 64-82 knots / 119 - 153 km/h

Probable Damage – Source NHC – *“People, livestock, and pets struck by flying or falling debris could be injured or killed. Older (mainly pre-1994 construction) mobile homes could be destroyed, especially if they are not anchored properly as they tend to shift or roll off their foundations. Newer mobile homes that are anchored properly can sustain damage involving the removal of shingle or metal roof coverings, and loss of vinyl siding, as well as damage to carports, sunrooms, or lanais. Some poorly constructed frame homes can experience major damage, involving loss of the roof covering and damage to gable ends as well as the removal of porch coverings and awnings. Unprotected windows may break if struck by flying debris. Masonry chimneys can be toppled. Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels, and gutters. Failure of aluminium, screened-in, swimming pool enclosures can occur. Some apartment building and shopping center roof coverings could be partially removed. Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. Failures to overhead doors and unprotected windows will be common. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. There will be occasional damage to commercial signage, fences, and canopies. Large branches of trees will snap and shallow rooted trees can be toppled. Extensive damage to power lines and poles will likely result in power outage that could last a few to several days”*

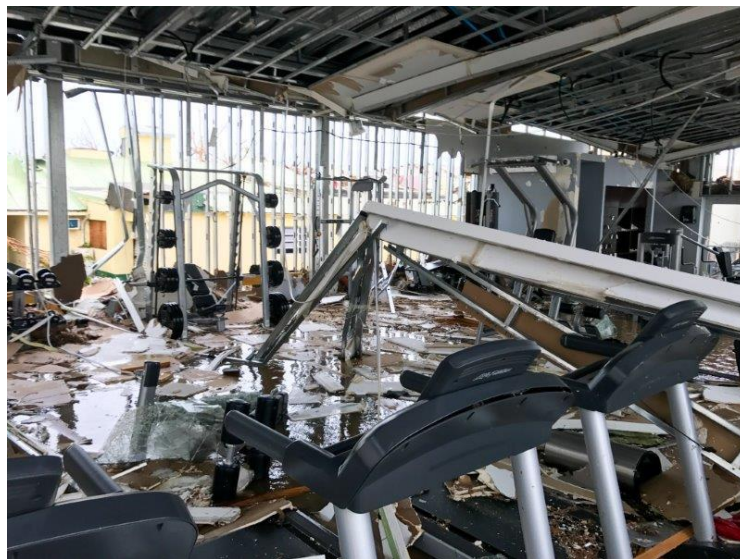


Hotel Room after a Category 5 Hurricane

### 2.2.2 CATEGORY 2

Range of wind speed: 96-110 mph / 83-95 knots / 154-177 km/h

Probable Damage – Source NHC – “There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. Older (mainly pre-1994 construction) mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. Newer mobile homes can also be destroyed. Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. Unprotected windows will have a high probability of being broken by flying debris. Well-constructed frame homes could sustain major roof and siding damage. Failure of aluminium, screened-in, swimming pool enclosures will be common. There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. Unreinforced masonry walls can collapse. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. Commercial signage, fences, and canopies will be damaged and often destroyed. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.”



The Hotel Gym

### 2.2.3 CATEGORY 3

Range of wind speed: 111-129 mph / 96-112 knots / 178-208 km/h

Probable Damage – Source NHC – “There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. Most new mobile homes will sustain severe damage with potential for complete roof failure and wall collapse. Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. There will be a high percentage



of roof covering and siding damage to apartment buildings and industrial buildings. Isolated structural damage to wood or steel framing can occur. Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. Numerous windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Most commercial signage, fences, and canopies will be destroyed. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to a few weeks after the storm passes.”



Debris and Destruction

#### 2.2.4 CATEGORY 4

Range of wind speed: 130-156 mph / 113-136 knots / 209-251 km/h

Probable Damage – Source NHC – “There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. A high percentage of newer mobile homes also will be destroyed. Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. Well-built homes also can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Extensive damage to roof coverings, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. There will be a high percentage of structural damage to the top floors of apartment buildings. Steel frames in older industrial buildings can collapse. There will be a high percentage of collapse to older unreinforced masonry buildings. Most windows will be

blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.”

### 2.2.5 CATEGORY 5

Range of wind speed: 157 mph or higher / 137 knots or higher / 252 km/h or higher



Category 5 Rips through Hotel Building

Probable Damage – Source NHC – “People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes. Almost complete destruction of all mobile homes will occur, regardless of age or construction. A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Extensive damage to roof covers, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will occur to nearly all unprotected windows and many protected windows. Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. Complete collapse of many older metal buildings can occur. Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. Nearly all windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Nearly all trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.”

## 2.3 PLANNING AND PREPARING FOR THE WORST

Historical data and subsequent modelling can provide a level of certainty but it is not uncommon as stated previously that hurricanes do not always behave as predicted. Many countries, organizations and individuals have been caught out by in the belief that a hurricane will pass them by or they will have limited exposure only to find out in the final hours that the hurricane has changed course or increased in intensity. Planning and preparing for the worst should be the overriding goal of any organisation and individual in order to withstand the onslaught of a hurricane. Failure to do so risks lives, property and the environment.

### 2.3.1 CONSEQUENCES

The consequences for not planning and preparing for a hurricane are extremely serious. A category 5 tropical cyclone will rip through a residential or business area like a red-hot knife through butter. The devastation can be compared to a war zone, as entire buildings are destroyed or levelled. Cars, boats and small planes are tossed about like rag-dolls often smashing into buildings and acting as battering rams. Utility lines are cut and pipes are severed, even below the ground.

Severe flooding can occur which represents an equally dangerous and life-threatening factor.



Flooding inside the Hurricane Center

The danger of fire is always present and the sheer force of the wind leaves fuel in its wake only waiting for an ignition source to create further destruction.

### 2.3.2 WEATHER INFORMATION

As with all information, particularly in today's world, using a trusted source is imperative to planning and preparing for hurricanes. Governmental agencies are normally the best source of hurricane information such as the National Hurricane Center (NHC), which is a body of the National Oceanic and Atmospheric Administration (NOAA). The use of other weather

information providers should be used with caution as their source data may be misleading, inaccurate or out-of-date. There are many ‘hurricane’ Apps today that use fancy graphics and animation, but the source of their data and its accuracy should never be solely relied upon. It is always best to double check different sources but the fall-back position should be a governmental agency such as the NHC.

As a golden rule, the hotel and resort should always take any hurricane alert and its associated strength when issued by an authority and **then raise it to the next level** as an in-built safety factor. So, for example, a ‘hurricane watch’ should be raised to a ‘hurricane warning’. The difference between the two is that one is ‘possible’ (watch) and the other is ‘expected’ (warning). If it is ‘possible’ then for the purpose of safety one should ‘expect’ it. Similarly, when a tropical cyclone is a category 1, then for the purpose of safety one should expect a category 2.

When one observes the probable predicted path of a hurricane and it is found that the hotel and resort will be on the perimeter of the probable predicted path then they should consider that they **will be** exposed to the hurricane. If there is any doubt whatsoever as to whether they will be exposed to a hurricane, they must consider that they will. The reasoning behind this philosophy is to give the organisation plenty of time to properly plan and prepare and thus be in a position to save life, property and the environment. There are no second chances!

The website for the NHC is: <http://www.nhc.noaa.gov/>

Other trusted meteorological organizations are:

- UK Met Office - <https://www.metoffice.gov.uk/>
- Dutch Met Office - <http://www.knmi.nl/home>
- Canadian Met Office - <https://weather.gc.ca/>
- French Met Office - <http://www.meteofrance.com/accueil>



A Different View

## 3 SECTION 3 - PHASE 1 - PLANNING

**IN THE FOLLOWING SECTIONS WE WILL CONSIDER THAT A CATEGORY 4/5 HURRICANE WILL STRIKE THE HOTEL AND RESORT.**

### 3.1 THE 5-STAR TEAM

- THE FIXER
- THE MANAGER
- THE COMMUNICATOR
- THE ENGINEER
- THE COMMANDER

The hotel and resort must put in place an organisational structure and 5-star team which consists of senior management and/or specialist consultants whose skill sets will match the roles needed to achieve success. Each team member has a different job description to the others but all are equally vital so that the planning, preparing, the actual event and aftermath go as smoothly as possible. As a general rule of thumb each member of the 5-star team is worth 20% towards a 100% success rate. No one can do it alone!

**ALWAYS EVACUATE AS MANY GUESTS PRIOR TO THE HURRICANE AS POSSIBLE.**

#### 3.1.1 THE FIXER

The Fixer is generally the owner, managing director, vice president or a person who is at the top or near the top of the organization's structure.

The human characteristics of the Fixer would be similar to that of a business person, diplomat, and politician.

The Fixer is essentially in charge of creating and communicating the needs of the organization to external influences such as governmental agencies, emergency services, other businesses, insurers, lawyers and their own corporate head office.

The Fixer can be likened to a puppet master who is pulling the necessary strings in the background and has an overview of the entire situation. The Fixer must have the ability to draw in external resources when required and therefore should initiate a line of communication well in advance of hurricane season.

The Fixer is advised to prioritize safety of life, property and the environment before normal competitive business practice and relationships with other businesses are the key to the success.

Competitors should be seen in an emergency as a resource for assistance and vice versa. Past disagreements, dislikes and conflicts are of no value in an emergency situation and do not serve any parties particularly in the aftermath where devastation has occurred.

It is advisable to set up a loose hurricane agreement with competitors and other organizations such as airlines, travel agents and valuable services whereupon the Fixer can pull resources and depend upon assistance and give assistance accordingly.

- National and Local Emergency Services
- Airline Contacts
- Hotelier Contacts
- Government Contacts
- Travel Agents
- Insurance Contacts
- Charity and Welfare Services
- Social Media Control
- National Media Control
- External Head Office Control and Communication
- Economics – Money
- Cash
- Insurance

It is essential that the Fixer has an open line of communication to the Manager before, during and after the event so as to receive updates.

The Fixer should never be in the vicinity of the hurricane center and preferably should be directing operations from a safe place, whether that is in another city, state or even country. It is however noted that depending on the size of the organization and its location that the Fixer may be local to the hotel and resort, especially island properties.

### 3.1.2 THE MANAGER

The Manager should be the on-site general manager of the hotel and resort.

The characteristics of the Manager should be a person who is extremely organized, a good people-manager, logical, a good administrator and possesses experience in the overall operation of the hotel and resort.



The Hotel Foyer

The Manager is in charge of organizing and coordinating the planning and preparation, but not the actual event itself, i.e. the passing of the hurricane over the property, as that is the duty of the Commander.

The Manager coordinates the timely evacuation of the guests from their hotel rooms with the assistance of the Commander.

The Manager hands over to the Commander once the guest and staff muster is complete. A timeline of events is detailed below.

The Manager is also in charge of organizing staff and assigning their duties.

The Manager is in charge of the checklists and essentially runs the entire planning and preparation operation right up until just before the hurricane and again assumes leadership once the situation has become stable and safe.

The Manager needs to liaise with the Fixer throughout the process in order to provide a continuous situation report.

The Manager and the Commander need to have a very good relationship and also, they must clearly identify when leadership is passed over between each other.

The Manager must not interfere with the role of the Commander during the actual event and the Commander must not interfere with the role of the Manager prior to or after the event. Conflicting orders should never happen in an emergency situation.

### 3.1.3 THE COMMANDER

The Commander should be a person who has had prior experience in emergency situations.

Commanders may typically be ex-military personnel, Firemen, Police Officers, Pilots, disaster relief professionals and passenger ship Captain's etc.

The typical characteristics of the Commander would be a person of mental strength, leadership qualities, rational and a good quick outside of the box thinker.

The Commander is in charge just before the onset of the hurricane and until after it has passed and the situation has been stabilized and is safe.

Prior to the event the Commander assists the Manager on the technical planning and preparation and assists on the more technical points of the planning and preparation.

The Commander must provide feedback to the Manager regarding technical preparations involving the Engineer. The Commander works closely with the Engineer in setting up the hurricane center/bunker and the associated technical equipment that will also be needed.

The Commander and Engineer must ensure through diplomatic dialogue that the Manager has prioritized the organizations objectives and not strayed off path, i.e. it is always survival first and property second.

The Commander assumes the role of meteorologist and tracks the hurricane from the start until it is passed and clear. The Commander must provide frequent updates on the position, speed, predicted path and the strength of the hurricane to the Manager.

The Commander ensures that crisis management and crowd control are maintained throughout the hurricane.

The Commander and Engineer should have a good understanding of each other's roles and work closely together to ensure technical success.

### 3.1.4 THE ENGINEER

The Engineer is normally the on-site Chief Engineer.

The Engineer is in charge of all technical related machinery, utilities and equipment.

The human characteristics of an Engineer are well known, but for the sake of good order, they are normally highly logical and skilled in machinery, electrics and construction.

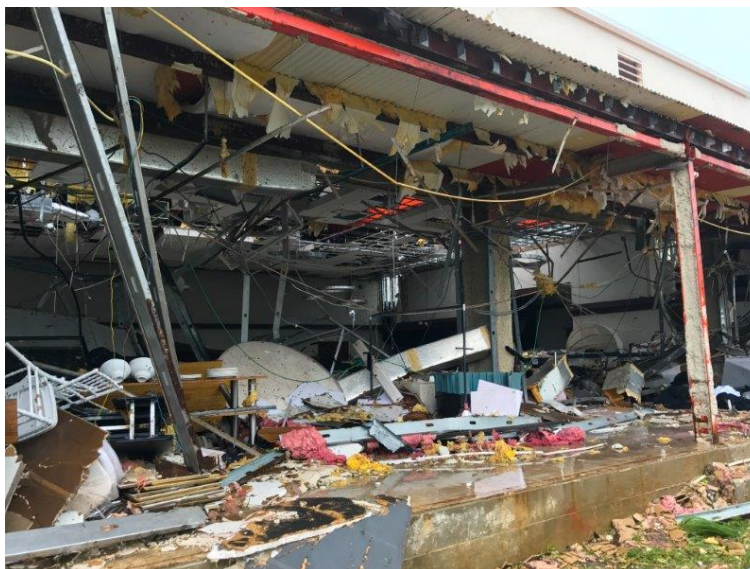
The Engineer works with the Commander in preparing all technical aspects ready for the hurricane.



The Engineers role is extremely important and they are normally very busy setting up the hotel from a technical aspect and so they must not be employed in any administrative duties.

The Engineer is to choose a suitable building as the hurricane center/bunker.

**If no suitable building exists on site, i.e. a reinforced concrete building (all 4 sides and the ceiling/roof) then evacuate all guests and staff members to the nearest official government hurricane center.**



The Convention Center

The Engineer is required to give a risk assessment to the Manager and Commander on the integrity of the hurricane center/bunker.

The Engineer is to also choose a suitable building as an alternative safe haven.

It is vital that the Engineer has all the necessary resources available and is not hampered by lack of equipment and manpower.

The Engineer is in charge of maintaining the integrity of the hurricane center/bunker and technical equipment during the event.

In the aftermath of the event the Engineer works towards fixing and maintaining the structure (if qualified) and utilities.

### 3.1.5 THE COMMUNICATOR

The Communicator is responsible for all internal communications between the management and the guests and staff.

They should generally be an Entertainment Director or a Human Resources Manager.

The Communicator should obviously have the ability to communicate clear and precise factual information to large numbers of persons.

The Communicator works throughout the timeline liaising with the Manager and Commander and keeping guests and staff both verbally and through printed material informed.

The Communicator acts as the muster station (roll call) leader before the event and assists the Manager in accounting for the number of guests and staff.

The Communicator will also make announcements during the event to keep guests and staff briefed; this is to be done in consultation with the Commander.

In the aftermath of the event the Communicator will hold morning and evening briefings for the guests and staff.



### 3.2 TIMELINE

Abbreviations:

- PIC – PERSON IN CHARGE
- 2I/C – SECOND IN CHARGE
- FIX – THE FIXER
- MGR – THE MANAGER
- CDR – THE COMMANDER
- ENG – THE ENGINEER
- COMM – THE COMMUNICATOR

<b>DAY</b>	<b>DUTY</b>	<b>PIC</b>	<b>2I/C</b>
1	RISK ASSESSMENT	CDR	MGR
1	INFORM FIXER	MGR	COMM
1	EXTERNAL COMMS	FIX	MGR
1-3	PLANNING	MGR	CDR
2-5	PREPARATION	MGR	CDR/ENG
5	MUSTER	MGR	COMM
5	EVENT	CDR	ENG
5-6	IMMEDIATE AFTERMATH	CDR	ENG
6	MAINTAIN REFUGE	ENG	MGR
6+	EVACUATION	MGR	FIX
N/A	EXTERNAL REPORT	FIX	MGR

### 3.3 MEETINGS

The Manager is to hold the first staff meeting 5 days prior to Hurricane arrival. There are to be 2 meetings every day, one in the morning and one in the late afternoon up until the mustering of the guests and staff. The meetings are to be attended by all middle and senior management across all departments. The outcomes of the meetings are to be cascaded to all staff. The 5-Star Team are not to leave the middle management in the dark and are encouraged to be open and honest with the staff and guests.

## 4 SECTION 4 - PHASE 2 – PREPARATION

### 4.1 PREPARATION

A meeting should also take place in the hurricane center at least 48 hours before the hurricane to familiarise and train staff on the equipment (N.B. The hurricane center should be ready not less than 24 hours prior to the hurricane). A brief on the safety procedures for emergency evacuation in case the hurricane center is compromised is essential.

The Commander should give a short training session to all staff on crowd control and crisis management.

The Manager is to begin the evacuation of all guests and contractors immediately. It is strongly recommended to get as many guests evacuated as possible if there is any chance that the hurricane will strike the hotel and resort.

The Manager is to order an assessment report of the hurricane center/bunker from the Engineer and Commander, which shall include but not limited to:

- Position on site
- Structural integrity
- Exposure to wind
- Liability of flooding
- Access constraints and issues
- Familiarity to guests, contractors and staff
- Proximity to secondary hurricane center/bunker (safe haven) and routeing
- Suitability for mustering guests, contractors and staff
- Fire risk

The Manager is to set-up a team specifically for dealing with mustering guests, contractors and staff. The muster team should consist of front-house and reception staff. An up-to-date detailed list of all persons, including children, who are expected to be on site during the hurricane, should be drawn up, which should include:

- Full name
- Room number
- Full address
- Emergency Contact Details
- Nationality
- Occupation

- Gender
- Passport, driving license or identification number
- Age (Date of Birth)
- Flight bookings
- Any medical requirements
- Any dietary requirements

The Manager is to ensure that a hotel evacuation team is set up to coordinate the evacuation of the guests and contractors from their respective hotel rooms. The evacuation team should consist of a mixture of security, front-house staff and the Commander. The size of the evacuation team should be proportionate to that of the size of the hotel.

If there are multiple accommodation buildings on the hotel complex then there should be multiple evacuation teams. Therefore, the time taken to evacuate the hotel fully of all guests should be taken into account.

The Manager is also to set up personnel for corridor/alleyway guides, stairway guides and door guides to assist in the evacuation of the hotel to the hurricane center. Good sources of personnel are housekeeping and any available security staff.

The Manager is to pre-empt any subsequent check-in of guests and liaise with travel agents accordingly.

The Manager is to order the Communicator to promulgate hurricane public information notices concerning the hurricane around the hotel property.

The Manager is to order the Commander to liaise with the on-site Security team and draw up a detailed plan of securing the hotel before, during and after the hurricane. Attention should be drawn to any casino, securing a perimeter and the possibility of looting.

The Manager is to liaise with the local Doctor or Medical Center and invite them to stay in the hurricane center, if possible, or open a line of communication including transportation for medical emergencies.

The Manager is to order the Communicator to test the Public Address system. If there is no Public Address system at the hotel and resort then a microphone and an amplifier can be used or at the very least megaphones.

## 4.2 PHYSICAL HOTEL PREPARATIONS – (DAMAGE CONTROL AND UTILITIES)

### 4.2.1 SAND BAGS

The distribution of sand bags must be placed in areas to prevent flooding. Sand bags are to be layered in a brick wall type construction. This shall include creating run-off's or diverting excessive water away from the hurricane center. Attention should be drawn to the proximity of the ocean and/or any river.

Further attention should be drawn to the height of the hotel above sea level. Storm surges are common and so protecting the resort from wave action is very advisable. Sand bags can be used as storm breaks and placed in a 'V' shape formation in-between the beach and the hotel to create run-offs to drains, drainage channels or ditches.



Storm Surge

Further any external corridors/alleyways should be blocked off but only if the water can run-off to a drain, drainage channel or ditch. Alleviating flooding and preventing build-up is particularly important, so it is important that flood routes be established away from the hurricane center.

Sand bagging should not only prevent ingress of water but is to be used as a means of diverting water away from the property.

Any external doors from the hurricane center (except the emergency exit quick release door) should be triple bagged at least 3 deep and at least 3 high.

The sand bags should be both sides of the door with the sand bags of the internal side of the door being flush with the door.

If the door is outward swinging, on the external side (outside) of the door the sand bags should be arranged in a V-shape pattern. While water may collect within the 'V', in case of extreme emergency the door may be opened if required.

If the door is inward swinging then the sand bags can be flush against both sides (inside and outside).

In either case the internal sand bags regardless of which way the door swings can be removed by hand in an emergency.

The number of sand bags will obviously be dependent on the size of the hotel. Therefore, it is advisable that a sand bag dump is created well in advance of hurricane season. The size of sand bags should be no bigger than double the size of a regular bed pillow for ease of handling.

Sand bagging of the property is time consuming and therefore appropriate manpower should be assigned by the Manager under the supervision of the Engineer.

#### 4.2.2 DRAINS AND DRAINAGE CHANNELS

All drains and drainage channels should be kept clear and have appropriate filter guards in place.

#### 4.2.3 ELECTRICAL SUPPLY AND BREAKERS

The electrical supply presents a fire risk so it is imperative that a full understanding of the hotels electrical system is understood. If the electrical system is not properly understood it is advisable to seek a professional electrical engineer who will be able to prepare the hotel for the incoming hurricane.

The emergency generator (if applicable) should be tested on day 1. The emergency generator should be fully fuelled and a calculation made of how long it can be run for on a full tank of fuel. The emergency generator should be prepped and ready for post-hurricane operations. Furthermore, the emergency generator should be capable of providing enough power to the hurricane center.

All electrical distribution boxes and associated breakers should be identified and inspected so that they can be switched off and / or isolated.

#### 4.2.4 MAIN ELECTRICAL ISOLATION (NOT THE EMERGENCY GENERATOR)

To avoid fires caused by electrical shorts or surges, electrical power for the entire hotel complex should be shut down.

There is no need to have mains electrical power switched on as the emergency generator (if applicable) and the portable generators are sufficient to provide services to the hurricane center.

The Engineer should in any case isolate all local breakers throughout the hotel complex before the arrival of the hurricane.

All electrical plugs throughout the complex must be removed from their respective sockets without fail.

In the event of water ingress into the property when the power is eventually switched back on after the hurricane, if plugs are still in their sockets there could be a potential for shorting and fire.

The Engineer in conjunction with the Housekeeping must remove all plugs from their sockets in every space throughout the hotel complex.

#### 4.2.5 PORTABLE EMERGENCY GENERATORS

No less than two heavy duty portable emergency generators should be taken to the hurricane center complete with fuel for 24 hours continuous running.

The generators should be clear from the floor and preferably placed on wooden pallets.

The generators are to be powerful enough to run emergency lighting, portable pumps, fans and any other electrical equipment within the hurricane centre.

The generators should be of industrial grade and not the home emergency type. However, the generators should be portable enough to be lifted by 2 persons.

A suitable door that leads to the outside of the hurricane center should have a hole cut into it not less than 3 feet above the floor. This hole should be used as a means to eject any exhaust gas. The hole should be large enough to take the exhaust hose and then the hole should be sealed around the hose with duct tape or builders foam.

**ALL EXHAUST GASES MUST BE EXPELLED TO THE OUTSIDE, IF IN DOUBT  
SWITCH IT OFF! ALWAYS HAVE THE GAS ANALYZER ACTIVE**

#### 4.2.6 PORTABLE PUMPS

Portable pumps with hoses and filters should be available and taken to the hurricane center. They should be placed on wooden pallets and clear of the floor.

The pumps are to be situated near the emergency generators. A suitable door that leads to the outside of the hurricane center (preferably the same door as the generator exhaust above) should have a hole cut into it not less than 3 feet above the floor. This hole should be used as a means to eject any water that enters the hurricane center. The hole should be large enough to fit the hose and then the hole should be sealed around the hose with duct tape or builders foam.



#### 4.2.7 EMERGENCY LIGHTING

Emergency lighting should be taken to the hurricane center to provide sufficient light in the event of a power failure.

Emergency lighting should be tested prior to use and if preferable should be of the LED, waterproof and of the tripod type.

Emergency lighting cabling should be clear of the floor and situated at a height of no less than 5 feet from the floor. Electrical cables can be run along walls using duct tape or another secure means. The lighting should be distributed throughout the hurricane center but kept close to the walls so as not to create an obstacle or tripping hazard.



Lighting

#### 4.2.8 PORTABLE TRI-POD TYPE FANS

Fans should be distributed throughout the hurricane center next to all of the exits and raised off the floor.

Fans are used to cool the air and provide sufficient ventilation of the hurricane center.

During a tropical storm the air temperature and humidity may rise, which will cause an uncomfortable environment within the hurricane center, so much so that there is a possibility that the occupants, particularly the frail and elderly may faint or suffer from heat exhaustion. The humidity may also cause anxiety and a desire to seek fresh, clean air outside while ignoring the dangers of the hurricane.

### 4.3 FIRE

#### 4.3.1 ASSESSMENTS FOR FIRE RISK

An assessment for the risk of fire should be made well in advance of hurricane season with particular regards to physical property damage, flying object debris, water ingress, potential

electrical shorting, flammable materials and exposure to flammable substances such as oil, gasoline and chemicals etc.

#### 4.3.2 SPRINKLER SYSTEM

The sprinkler system should be tested well in advance of hurricane season to check for pump and for booster pump activation. The water supply should be checked including any water holding tank/s.

If the hotel or resort is situated near the sea or a large water source there may also be an emergency water supply from that as well as there is a strong likelihood that the mains water may get knocked out, particularly during category 5 hurricanes.

The sprinkler system for a hotel and resort may have many 'loops', which can be isolated, and there may be an ill-judged tendency to isolate certain loops to avoid flooding resulting from a broken sprinkler. I would suggest that the damage from a broken sprinkler during a hurricane would cause far less damage than a fire and so it is my opinion that the entire sprinkler system is active at all times.

#### 4.3.3 FIRE HOSES

Fire hoses should be pre-rigged before the onset of a hurricane. That means that all hoses must be connected to their hydrant before the onset of the hurricane.

A test of every fire hose should be made to ensure that they are not damaged or leaking.

All fire boxes containing the hoses should be unlocked.

Always ensure that the fire nozzles are connected and operational and that the hydrant valve is free turning.

#### 4.3.4 PORTABLE FIRE EXTINGUISHERS

All extinguishers should be ready for immediate use throughout the hotel facility. That means that all extinguisher boxes should be unlocked.

It is worthwhile training staff on the different types of extinguishers (water, powder, foam, CO<sub>2</sub> and wet chemical) and their usage on different classes of fires. The Commander is advised to demonstrate the actual use of a fire extinguisher.

#### 4.3.5 MAINS GAS

The main gas supply should be switched off prior to the arrival of the hurricane. The mains gas system should be bled off IN A CONTROLLED MANNER (depressurized) at each and every gas point (kitchens etc.) and I would strongly suggest that the local fire department or the Engineer

(if competent) supervises this operation. It is also my opinion that the local fire department can before hurricane season instruct the hotel Engineer/s on how to do it if there is any doubt.

#### 4.3.6 SOURCES OF IGNITION

All portable gas bottles (cooking), charcoal/firelighters (BBQ), diesel, petrol (other than for the hurricane center) and other sources of ignition should be removed off site and stored away from the hotel complex. Do not store any of these items in cupboards or lockers on-site.

#### 4.3.7 DEEP FAT FRYERS

All deep fat fryers should be emptied and the cooking oil removed and taken off-site.

#### 4.3.8 KITCHENS AND LAUNDRIES

These areas represent the greatest fire risk in the normal operation of a hotel, therefore special attention should be drawn to making them as safe as an area as possible.

Special regards should be given to cooking oils and deep fat fryers (above) in kitchens and chemicals in laundry areas.

It is imperative that all plugs are removed from sockets.

Any sterno's (Canned Heat) can be boxed up and taken to a secure locker near the hurricane center.

#### 4.4 BARS

Generally speaking alcoholic beverages that are over 40% proof should be deemed flammable.

Remove all alcohol from shelving including wines and beers and place them in as many refrigerators as possible.

Duct tape the doors shut or padlock them if possible. Not only will this lower the risk of fire but also prevents glass debris and also pilferage.

#### 4.5 WATER

The number one rule is to never drink the mains water supply after a hurricane as there is a possibility, particularly after a category 5, that the mains water lines could be polluted by a number of contaminants.

**DO NOT DRINK THE MAINS WATER SUPPLY UNTIL IT HAS BEEN TESTED BY A COMPETENT AUTHORITY.**

Immediately after hurricane Irma, I noticed that the wildlife had disappeared and so any attempt to drink the mains water (even though the supply lines had been destroyed), would have resulted in drinking water contaminated with dead lizards, birds, cats and dogs.

It is advisable to buy a large quantity of new plastic jerry cans and pre-fill them. The average person requires a minimum of 3 litres of water a day or more in the tropics.

Always ensure that the Food and Beverage Manager has a vast supply of water bottles. Give them away for free and do not charge!

The Food and Beverage Manager should have calculated how much water they need based on the capacity of the hotel complex.

The hotel must ensure that there is enough water for every guest and staff for at least 5 days + 20%.

75% percent of the total water should be taken to the hurricane center and the remaining 25% to a secure locker near the hurricane center. Fridges make excellent storage areas.

Intermediate Bulk Containers known commonly as an IBC tank or 'tote tank' provide an excellent way of storing fresh water. Always ensure that the tote tanks are clean and sanitized before filling them prior to the arrival of the hurricane. The tote tanks should be stored somewhere above ground level and in a sheltered area; preferably in a reinforced concrete space (car parks make excellent storage areas).

The tote tanks can be used as a back-up means for fresh water. The normal capacity of a tote tank is about 1000 liters and therefore there would normally be enough for 333 days for one person, so for 5 days it is possible to accommodate roughly 66 persons per tote tank.

Looters present a danger to the guests and staff. Most looters will initially steal useless items from shops such as TV's, computers and mobile phones, however, the most valuable commodity, even more valuable than money, is water.

After 24 - 48 hours when looters become aware that they are becoming severely dehydrated they will look for fresh water.

Always ensure that the water is never left unattended.

When rationing water always allow for the fact that some people will need more than others so while water should be controlled when distributed to the guests and staff there must never be overly protective of it as it may cause panic.

Water filtration and testing kits are part of the hurricane equipment list and so before any non-bottled water is used a test must be made before drinking. If in any doubt as to the purity of the water do not drink it, however, do not throw it away as there are other uses for non-potable

water such as cleaning surfaces and floors, cistern water (sewage section below) and in a dire emergency the water can be boiled, filtered and drank in small quantities.

Points to remember from the Center for Disease Control and Prevention (CDC) regarding water:

- *Never drink the water unless you know it is safe.*
- *Never wash or clean dishes, utensils, toys, or other objects in the water unless you know it is safe.*
- *Never bathe in the water unless you know it is safe.*
- *Never cook with the water unless you know it is safe.*
- *Never brush your teeth with the water unless you know it is safe.*
- *Never use the water to make ice unless you know it is safe*

#### 4.6 SEWAGE

Sewage represents a serious problem for a hotel during and after a hurricane. Sewage lines must be clear and all filters should be cleaned prior to the hurricane. In the event that the mains water is knocked out, toilets will not be able to flush in the normal way and so a build-up of sewage can present a serious health risk.

If sewage lines are intact but mains water is not online toilets can be flushed from rainwater. A bucket of rainwater can be tipped into the cistern to provide flushing.

If sewage lines are broken any toilets should be roped off or locked to prevent use.

An option is to have a number of portable chemical toilets.

Any toilets in use (particularly in the aftermath) must be cleaned and sanitized on a frequent basis and a housekeeping person should be designated full-time to fulfil this duty.

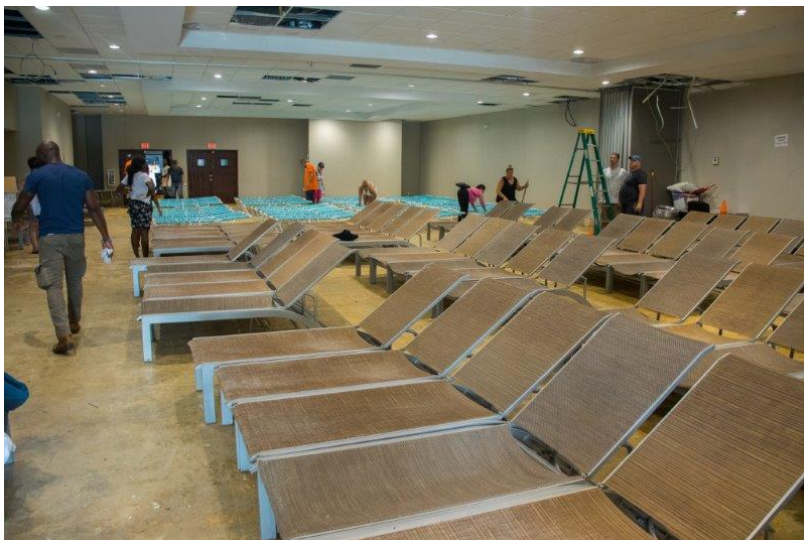
Hand sanitizers must be stationed outside and inside all toilets. The lavatory attendant must insist that all guests and staff sanitize their hands before and after using the toilets.

The lavatory attendant is a key role and it must be stressed to the person who is delegated this task just how important their job is and they should be treated with the utmost respect.

#### 4.7 SANITATION, HYGIENE AND FOOD CONTROL

Attention is drawn to the Center for Disease Control and Prevention (CDC) -

<https://www.cdc.gov/disasters/index.html>



Wash, Rinse and Sanitize... Everything!

The CDC has an excellent website dedicated to sanitation, hygiene and food control in the event of a hurricane. It would be foolish to try and attempt to provide detailed guidance on the CDC's recommendations. The United Sanitation Public Health course is an excellent source of education and therefore must direct hotel and resort management to the CDC website. We will however touch upon some key points from the CDC:

Hand sanitizers must be stationed throughout the hurricane center and in the aftermath in the designated safe space.

Hand sanitizers are extremely important in stopping the spread of bacteria and in preventing the spread of certain viruses. The environmental conditions during and after a hurricane can be very challenging and therefore sanitation, hygiene and food control are highly important in preventing illnesses.

Always ensure that guests and staff continually sanitize their hands on a frequent basis. If necessary post staff next to hand sanitizer stands and encourage guests and staff to sanitize or alternatively employ a member of staff to carry a portable sanitizer bottle/pouch and make rounds of the guests and staff.

Always ensure that guests and staff sanitize their hands before eating meals.

All food handling items (not for the hurricane center) and equipment in both areas should be stored in drawers and the doors sealed with duct tape.

#### 4.8 EMERGENCY FOOD SUPPLIES

Always have enough food for guests and staff for 5 days + 20%. The food supplies should be split 50% for the hurricane center and 50% in a safe storage area and at least 1 floor up from ground level.

Food should be of the 'dry' type and you should avoid wet foods.

Always avoid foods that can make a person feel thirsty and so low-salt dry food should be the preferred choice.

Any dietary considerations should also be taken into account.

The U.S. government makes the following recommendations for food provisions:

- *Ready-to-eat canned meats, fruits, vegetables and a can opener*
- *Protein or fruit bars*
- *Dry cereal or granola*
- *Peanut butter*
- *Dried fruit*
- *Canned juices*
- *Non-perishable UHT milk*
- *High energy foods*
- *Food for infants*
- *Comfort/stress foods*

Source - <https://www.ready.gov/food>

It is tempting for the hotel kitchen team to try and cater as per normal operations and it may be difficult in trying to persuade an over eager head chef, however, in a natural disaster it should be noted that humans can survive a long time without food (but not water) and therefore it is important to follow the above list.

It is advisable that food normally contained within fridges such as dairy products, meats and any other items that require refrigeration are thrown out to avoid spoiling and that fresh fruits and vegetables that are in chiller units are also removed and discarded. While this may seem harsh, much to the dislike of the Food & Beverage Manager, the extra space within the fridge can be used for water, dry foods and even medical supplies (insulin).

Refrigerators, on or off, are virtually indestructible and so optimum use of them for supplies in an emergency is vital.

From the U.S. Department of Homeland Security (sister website – Ready.gov)

Do:

- *Keep food in covered containers.*
- *Keep cooking and eating utensils clean.*
- *Discard any food that has come into contact with contaminated flood water.*
- *Discard any food that has been at room temperature for two hours or more.*
- *Discard any food that has an unusual odour, colour or texture.*
- *Use ready-to-feed formula. If you must mix infant formula use bottled water; or boiled as a last resort.*

Don't:

- *Eat foods from cans that are swollen, dented or corroded, even though the product may look safe to eat.*
- *Eat any food that looks or smells abnormal, even if the can looks normal.*
- *Let garbage accumulate inside, both for fire and sanitation reasons.*

Source - <https://www.ready.gov/food>

Remember to shut the bars down well in advance of the hurricane to prevent issues caused from drunkenness and remove all alcohol from guests and staff as they enter the hurricane center.

#### 4.9 BASIC HOTEL SANITATION

Regarding eating utensils, i.e. knives, forks and spoons etc., always keep a large box of plastic utensils (wrapped in plastic) and avoid using metal utensils. The same applies to plates, bowls and cups, instead use paper or plastic and avoid ceramics.

For sanitizing surfaces and floors, a good agent is chlorine diluted with water to about 200ppm (1000ppm if the surfaces have come into contact with sewage). It is however advisable to remove all bulk chemicals off-site to avoid pollution. Therefore, a very large quantity of chlorine-based bleach in regular household size bottles and chlorine bleach-based wipes are the chosen cleaning medium.





### Sanitation and Wipes

Stainless steel counter/work tops are the easiest to clean for food and drink preparation. Avoid wooden tables as they tend to trap dirt and grease and are also susceptible to mould and mildew.

All linens should be stored away and paper napkins used instead. If using linens, discard once used.

Garbage and all associated waste should be segregated as per normal hotel operations with color coded bags for wet food, dry food, soiled cleaning wipes, bathroom waste (including a separate bag for feminine hygiene products), diapers, general waste and of course special bags for medical waste.

In the event that portable chemical lavatories are used, IBC (Intermediate Bulk Containers) tote tanks can be used to dispose of the waste water. Always follow the instructions for emptying the chemical toilets and always thoroughly and frequently disinfect and sanitize the portable toilets.

#### 4.10 SWIMMING POOLS AND HOT TUBS

To avoid unnecessary flooding all swimming pools and outdoor hot tubs should be completely drained. They should be roped off and safety nets must be secured tightly across them, not only to prevent people from falling into them, but also to prevent debris from filling up the pools. All drain valves must be in the open position and the filters should be in place.



Drain all Pools before the Hurricane

## 4.11 COMMUNICATIONS

### 4.11.1 PUBLIC ADDRESS / ANNOUNCEMENT (PA) SYSTEM

If there is a PA system this should be tested in advance of the hurricane. While the PA system may have no power during the hurricane it can be used to muster the guests and staff before the hurricane.

### 4.11.2 MEGAPHONES

Megaphones should be brought to the hurricane center (depending on the number of guests and staff), which are useful for communicating instructions.

### 4.11.3 OTHER COMMUNICATIONS METHODS

It is essential that the hurricane center is equipped with communication devices. During and after a hurricane communication is an absolute necessity in order to provide a link to the outside world so as to pass on important information or request emergency services.

UHF and VHF radios provide effective coverage in the nearby vicinity.

Typically, a VHF radio will have a range of somewhere between 3 and 12 miles. A VHF radio is very handy for communicating with maritime traffic (Channel 16).

A UHF radio will have a range of up to 3 miles. UHF radios are normally used to communicate within a small range such as a hotel and resort but are unlikely to be effective outside the hotel complex. However, UHF radios are an absolute requirement for the hotel staff and a number of radios should be given out to key staff to ensure that there is a continuous flow of important information.

Cellular (Mobile) phones are of course common place, however, before the hurricane strikes it is advisable to purchase an additional 2 phones, each with a different carrier. Always ensure that a charging station is available in the hurricane center and make that known to the guests.

Always purchase a supply of portable cell-phone battery chargers and have them charged prior to the onset of the hurricane.

If possible connect internet to the hurricane center. Ensure there is FREE Wi-Fi and certainly do not charge for it.

Telephone land lines are also important and a direct open line from the hurricane center to the outside world should be made available. Again, do not charge for this service.

Satellite Phones are probably the most important communication device. Whilst these phones are expensive, in the event that all other terrestrial communication fails, a satellite phone will be indispensable.

Always ensure that the satellite phone is kept with the Manager or Commander and is never left unattended. There will be a strong desire for guests and staff to communicate with their loved ones on an individual basis, however, the Manager must after the hurricane has passed relay a muster count via the Fixer to an appropriate authority with any injuries or fatalities.

Never allow the satellite phone to be used by an individual as the allowable minutes in the satellite phone contract will diminish extremely quickly, particular as once it used by someone for a private call all other person's will demand to do the same thing.

While this may sound harsh, a relative or a loved one will not die from not hearing from a hurricane survivor.

How to communicate with the outside world is important. The sequence of information to the outside world should be relayed as per below:

- ALL STATIONS, ALL STATIONS, ALL STATIONS
- Identity/Name (for e.g. Hotel Calypso x 3)
- Position (for e.g. South Beach, Miami)
- Require Assistance
- Number of people (guests and staff)
- Important Information (injuries and/or fatalities etc.)
- "Over"

#### 4.11.4 UTILITY AND EMERGENCY VEHICLES

A number of utility vehicles must be present on site, which should include 4X4's, forklift trucks, diggers, ATV's and golf cart's etc. A vehicle with the ability to carry a stretcher is also required.

All vehicles should be parked as close to each other as possible during the hurricane, i.e. banked side-by-side and preferably close to a re-enforced concrete wall.

The vehicles should all be fully fuelled and charged (electric) prior to the hurricane. A fuel dump should be created and the fuel stored in a safe place near the vehicles.

Any other vehicles (both staff and guests) that will not to be used for emergency purposes should be driven off the site prior to the hurricane.

Vehicle keys must be kept in a safe place within the hurricane center.

A small boat with an outboard is also advised in case of severe flooding. The boat should preferably be positioned near the hurricane center. In the case that an indoor car park is nearby the boat can be stowed above ground level and if possible turned upside down.

Lif jackets should be stowed in a nearby locker or tied to the boat seating by their straps.

A selection of maritime distress flares, preferably 2 smoke flares, 2 hand-held flares and 2 parachute flares should be placed in a watertight container and kept within the hurricane center. The flares are only to be used by express permission of the Commander.

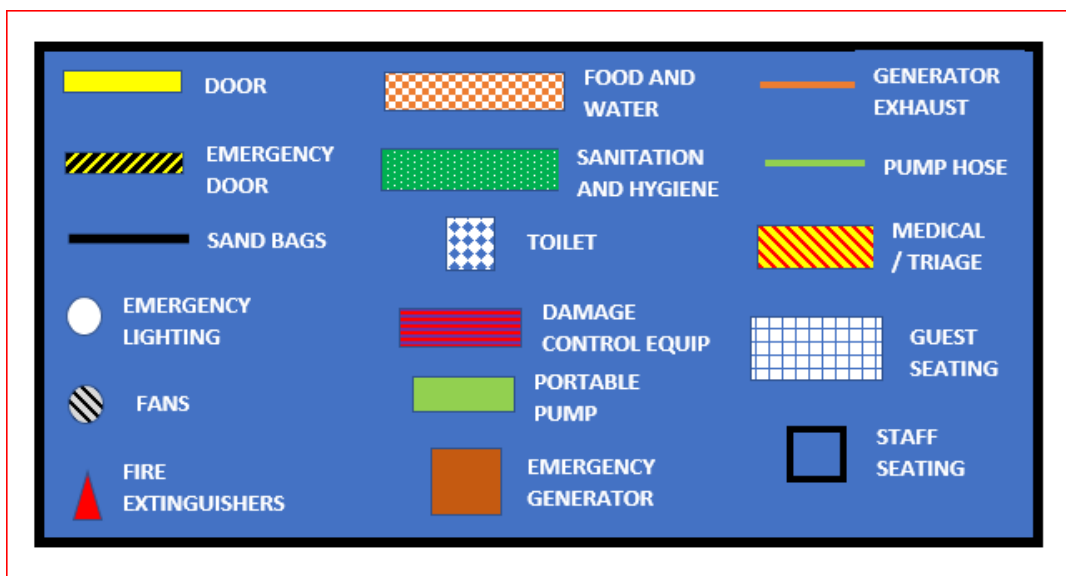
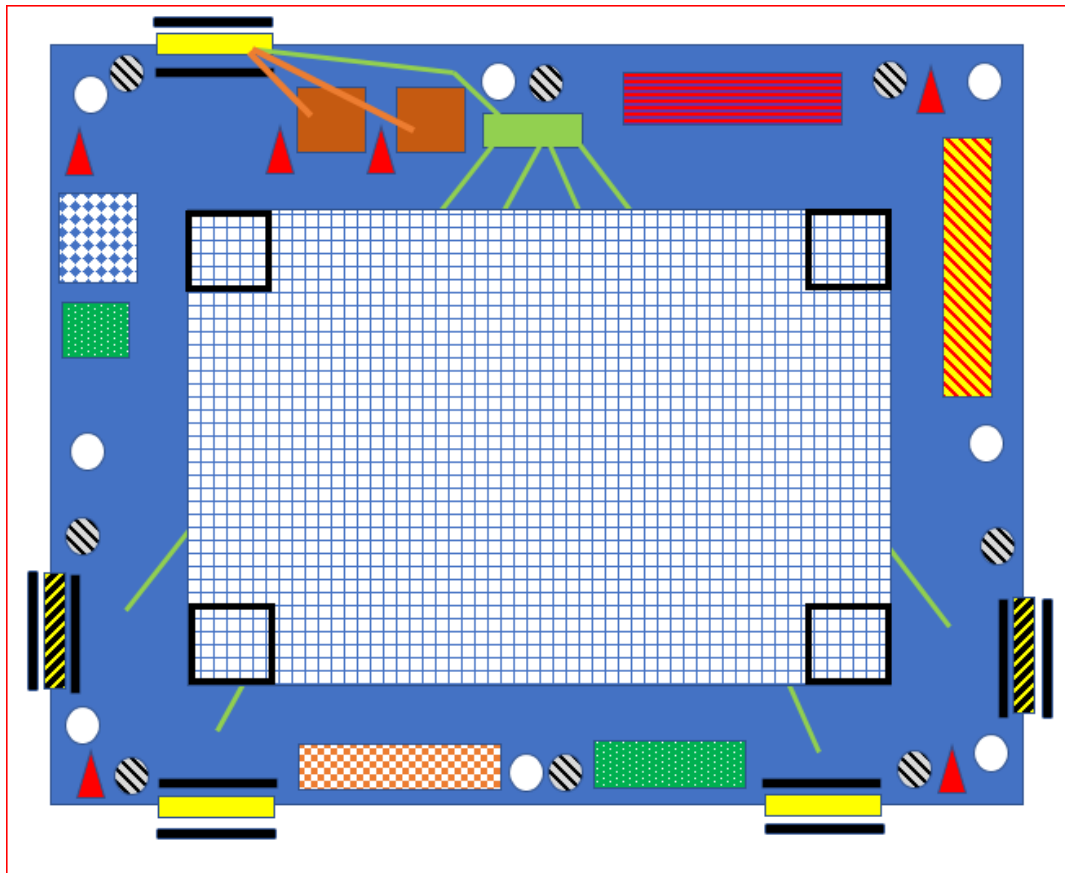
A trails or scrambler type motorbike is useful if there is a large amount of debris on the roads.



Bank cars side-by-side to avoid this

## 4.12 HURRICANE CENTER PREPARATIONS

### 4.12.1 RECOMMENDED HURRICANE CENTER LAYOUT



#### 4.12.2 RECOMMENDED LIST OF EQUIPMENT

DAMAGE CONTROL	HEALTH AND HYGIENE	FOOD AND WATER	MEDICAL (SEEK PROFESSIONAL ADVICE)	COMFORT
EMERGENCY GENERATORS	DISPOSABLE GLOVES	CANNED FOOD	<b>MEDICINES AS PER DOCTORS ADVICE</b>	SEATS
PUMP'S	DISPOSABLE CUPS, BOWLS, PLATES AND CUTLERY	DRIED FOOD	TISEPT SACHETS - SELECTION OF SPRAYS (ANTI-BACTERIAL WOUND WASHING, NOT EYES)	BENCHES
HOSES	SUNSCREEN - FACTOR 50	3 LITERS WATER PER PERSON PER DAY	DRESSING PACK, STERILE GAUZE (PACK) STERISTRIPS (7.5CM X 3MM) (7.5CM X 6MM)	FANS
SAND BAGS	AFTER SUN LOTION	NO DAIRY, NO UNCOOKED MEAT, FISH OR SHELL FISH	SUDACREM IODINE 250ML BOTTLE, PARAFFIN GAUZE DRESSING (EACH)	EMERGENCY LIGHTING
FIRE EXTINGUISHERS	CHLORINE-BASED BLEACH	NON-CARBONATED DRINKS - NO CAFFEINE	INADINE DRESSING (EACH), MICROPORE TAPE STEROPAD 10CM X 10CM (PK. 5) 5CM X 5CM (PK. 5)	BOOTS
TOOLS	CHLORINE BASED WIPES	INFANT FOOD	BODY BAG – LARGE SIZE	HARD HATS
TIMBER VARIOUS SIZES	LADIES PRODUCTS	PACKETS OF SUGAR	FINGER TUBIGAUZE PLASTIC FINGER DRESSING COVER	SIGNAGE
SHEETS OF PLYWOOD	BABIES PRODUCTS	BLANK	STERILE GLOVES (PAIR), BOX OF PLASTERS ASSORTED SIZES, PACK OF COMPEED ASSORTED SIZES	GARBAGE CONTAINERS
ACROW PROP'S / PIT PROPS	MOSQUITO REPELLANT	BLANK	CHLOROHEXIDINE DUSTING POWDER 15g	LIFEJACKETS
CHOCKS, BLOCKS AND WEDGES	CLEANING MATERIALS	BLANK	BENZALKONIUM CHLORIDE ANTISEPTIC PUMP SPRAY - WOUND WASH	TOWELS, PILLOWS AND SHEETS
RUBBER SHEETING	HAND SANITIZER	BLANK	ANTISEPTIC SKIN WIPES FOR WOUND CLEANING (CETRIMIDE), ALCOHOL (70%) WIPES	SUNBEDS

DAMAGE CONTROL	HEALTH AND HYGIENE	FOOD AND WATER	MEDICAL (SEEK PROFESSIONAL ADVICE)	COMFORT
METAL PLATING	STRONG RUBBER GLOVES	BLANK	PLASTIC BURNS BAGS, NAIL BRUSH, PLASTERS ASSORTED - DISNEY CHARACTERS MR. BUMP COOL PACK	PONCHO'S
BUCKETS	CHLORINE TEST STRIPS	BLANK	KENDRICK EXTRICATION DEVICE	TABLES
FUEL	SOAP	BLANK	SAM SPLINT CREPE BANDAGE (7.5CM X 4M) TRIANGULAR BANDAGES, MALLEABLE FINGER SPLINT, SET OF BOX SPLINTS	CELL PHONE CHARGING STATION
BATTERIES	WATER FILTRATION AND TESTING KIT	BLANK	THERMOMETER - AURAL THERMOMETER - AURAL REPLACEMENT CAPS, VOMIT BOWLS	CHILDREN'S GAMES
YELLOW AND BLACK (TIGER TAPE), ROPES AND SHOWER CURTAINS	PORTABLE CHEMICAL TOILETS	BLANK	CLINICAL WASTE BAG, SMALL SHARPS CONTAINER, BOX NON STERILE, LATEX FREE GLOVES	COLORLED WRIST BANDS
MOPS, SUGES, BRUSHES, SPADES	PAPER DISPOSABLE UNDERWEAR	BLANK	BEDPAN URINE BOTTLE (URINAL), LIQUID INSECTICIDE	BLANK
WORKING GLOVES	SANITARY TOWELS	BLANK	POWDER INSECTICIDE BODY BAG - LARGE SIZE	BLANK
DUCT TAPE	BLANK	BLANK	FACE SHIELDS, DISPOSABLE POCKET FACE MASK WITH VALVE AND O <sub>2</sub> INLET, FOIL BLANKETS	BLANK
KNIVES	BLANK	BLANK	TRAUMA FIELD DRESSINGS, SCISSORS TOUGH CUT BANDAGES: TRIANGULAR CALICO (STERILE)	BLANK

DAMAGE CONTROL	HEALTH AND HYGIENE	FOOD AND WATER	MEDICAL (SEEK PROFESSIONAL ADVICE)	COMFORT
MARITIME FLARES	BLANK	BLANK	HAEMOSTATIC (CELOX) GRANULES 15G AND 35G, HAEMOSTATIC GAUZE 7.6CM X 3M	BLANK
GAS ANALYZER	BLANK	BLANK	CAT TOURNIQUET	BLANK
BUILDERS FOAM	BLANK	BLANK	STRETCHERS	BLANK

The hurricane center should be prepped not less than 24 hours in advance of the hurricane.

The setting up of the hurricane center is to be primarily conducted by the ‘Engineer’ and ‘Commander’ and they should report to the ‘Manager’ when it is complete.

The emergency exits (quick release door) should be tested and that a safe route to the alternative safe haven is established.

The alternative safe haven is to be walked by the Manager and Commander and then promulgated to the rest of the hotel staff.

#### 4.12.3 THE HURRICANE LOCKER

The ‘Engineer’ should ensure that there is sufficient equipment in the hurricane locker prior to hurricane season so as to avoid any last-minute purchases.

The Engineer should check that all equipment is within its expiry dates well before hurricane season.

The Engineer should check that the hurricane locker is always locked to prevent pilferage.

The Engineer and Manager must ensure that the hurricane locker is well stocked and that any old or damaged equipment is replaced.

#### 4.12.4 SIGNAGE

Signage must be placed throughout the hurricane center.

It should be clear to all guests and staff where the emergency exit doors are located. This can be done using normal photoluminescence signage and also conveyed verbally by the Communicator.

Signage should also be in place to indicate the medical table, food and water station and toilets.



Signage must be in place throughout the hotel and resort directing guests to the hurricane center.

#### 4.12.5 HURRICANE CENTER LAYOUT

The layout of the hurricane center requires that certain key areas are kept separate from one another. While it is understandable that not all hurricane centers will be square in layout it is imperative that key areas are separated to avoid confusion from guests, ease of access, cleanliness, risk of contamination and to establish good crowd control and crisis management.

The overriding principles of creating a safe haven should be safety, health and hygiene, crowd control, access to water and lastly food.

While comfort is important, lack of comfort is unlikely to result in any permanent harm. Environmental conditions within the hurricane center may be uncomfortable for a while but good communication and crowd control will help reduce fear and panic.

It is essential that the Commander ensures that all hotel staff members are always present at their designated stations within the hurricane center and do not start wandering around as this will encourage the guests to do the same.

The Communicator should maintain a running verbal narrative with the guests throughout the passing of the hurricane, updating them on the position of the hurricane and answering any questions they may have.

The Commander is to continually update the Communicator so that there is a flow of information for the guests.



The Communicator giving Instructions

The emergency exit doors are to be manned by a member of staff at all times.

The Manager should under no circumstances challenge any decision in front of guests that are made by the Commander. It is imperative that crowd control be maintained at all times. Any need to question a decision made by the Commander should be made in private away from the ears of both guests and other staff members.

#### 4.12.6 SETTING UP THE MUSTER STATION

Muster station's just outside the hurricane center should be set up in advance of the hotel evacuation.

The muster stations should be ideally manned by front of house staff (reception staff).

Depending on the size of the hotel one or more muster stations should be set up to avoid queuing and anxiety.

The muster stations should have the guest and staff lists and be ideally manned by two or more persons. It is important that the Manager and/or the Communicator be in the vicinity of the muster stations to answer any questions that the guests may have.

Coloured wrist bands are extremely important. Do not write a person's name and D.O.B. on them. A simple coloured band is sufficient. The reasons for wearing a coloured wrist band are simply to identify who is accounted for and for security purposes in the aftermath of the hurricane.

It is important that an aura of calm, organization and friendliness be present at the muster stations.

Additionally, staff should be on hand to take away any unnecessary luggage and guide guests to the hurricane center.

Communication to the hotel evacuation teams from the guest muster stations is essential and the guest muster lists should always be updated and double checked throughout the mustering process.

#### 4.12.7 HOTEL ROOM EVACUATION

A full evacuation of the hotel should be made at least 6-12 hours prior to the approach of the hurricane. The logistics of this are to be directed by the Manager and a plan must be made well in advance to clear each floor and area of the hotel.

The Commander is the person-in-charge of the hotel evacuation teams; however, it is the Manager's responsibility to arrange the manning of the hotel evacuation teams and this of course will also depend and be consistent with the size of the hotel.

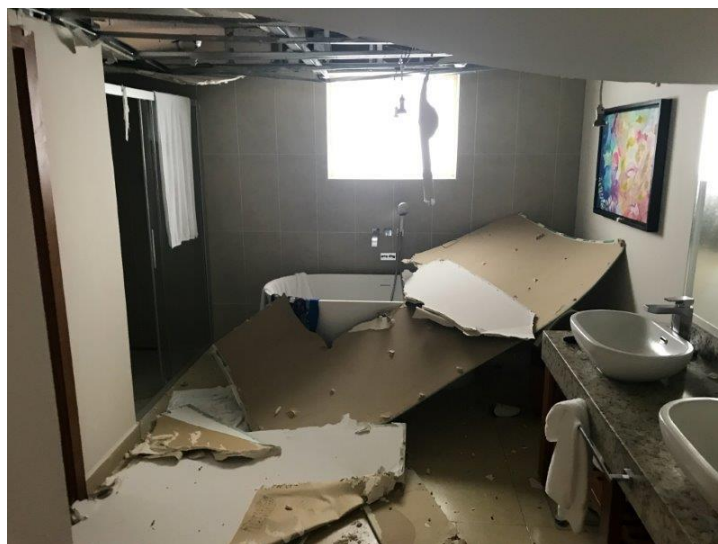
Each evacuation team should consist of a team leader who is in charge of checking off the guest's names and a number of other staff who are responsible for knocking on doors and clearing each hotel room.

It is advisable to have the Security Officer on standby during this phase.

There may be many guests who for one reason or another will refuse to leave their hotel room. Physical force is definitely not recommended as guests can become highly agitated or stubborn in emergency situations. This may be due to a number of reasons such as the triggering of their flight mechanism, alcohol consumption, disorientation, physical / mental difficulties or even just through language barriers.

Time should not be wasted on any guests who refuse to leave their room and the evacuation team must move on to the next room as quickly as possible. While this may sound harsh a second or third run-through of the accommodation, time and weather permitting, will be made and again the guests can be requested to proceed to the hurricane center.

It is sometimes the case that reality will sink in and the guest will naturally make the right choice. If on the second or third run-through of the accommodation any guests who remain in their room have been given ample opportunity to make a decision and therefore should be left to the mercy of the hurricane.



A Hotel Guest Bathroom

Under no circumstances should anyone physically force someone from their room as it is better to have a hurricane center that is calm rather than introducing someone who may be a danger to themselves or others.

The Evacuation Team must wear high-vis vests so as to distinguish them from other guests and be wearing their hotel uniform.

The evacuation team leader should have radio communication with the Manager and should report in when a floor has been completed or relay any other pertinent information.

The evacuation team should also consist of alleyway, stairway and door guards throughout the hotel complex whose job it is to direct guests to the hurricane center. A runner should also be employed to carry out urgent tasks when necessary.

The evacuation team leader should tell guests ONLY to take their passport, medicine and valuables and to proceed to the hurricane center immediately.

It is human nature that guests will start packing a bag, in the event that this happens, allow the guests to take their bags with them and a suitable luggage locker near the hurricane center can be utilised. The Muster Team at the hurricane center can politely take their luggage away for safe storage.

The evacuation team, once a room is empty, should then place a sticker on the door or hang a luggage tag on the door handle to avoid confusion on the second run-through.

Once a final tally has been made at the muster station by the Manager, the Commander can decide whether time and weather permit a final run-through of the accommodation for any guests that are missing from the front of house guest list.

It should be noted, as experience has shown, that there will always be those who under-estimate the danger of a hurricane and therefore the safety of the staff becomes paramount and no further searches for missing guests or non-attending guests should take place.

#### 4.12.8 FIGHT OR FLIGHT

The Fight or Flight response is a natural physiological response that is triggered when we feel a strong emotion such as fear. Fear is the normal emotion in response to a danger or perceived threat. Fear also has a close emotional relative that we call anxiety. The Fight or Flight response has evolved over thousand's of years to enable us to react with appropriate actions: to run away, to fight, or sometimes to freeze completely.

In general, it is hard to calculate how many persons will either fight or flight. One fact that can be said is that the two responses will at some point in time, whether before, during or after the hurricane, be triggered in all persons, either distinctly separate or a mixture of the two responses.

It is a fallacy that those who go into a flight response are weaker than those who go into a fight response. Each emergency situation is different and one can expect a different response to different situation.

A person may begin to act in fight mode but then after a period of time go into flight mode or conversely a person may go into flight mode then go into fight mode. It all depends on the severity and circumstances of the situation.

People often ask the question, what would I do in an emergency? That is an impossible question to answer as it depends on many factors. The most important factor in determining fight or flight is training.

#### 4.12.9 TRAINING

Training certification and/or qualifications for emergency situations are typically: first aid, basic fire fighting, crowd control, crisis management, disaster relief, damage control and health, hygiene and food awareness.

Combine some of the above training with a skill set such as engineering, then the chances of success increase dramatically.

It should be well noted by management that training and drills over and over again should automatically trigger the 'fight' response.

Train staff on a regular basis.

## 5 SECTION 5 - PHASE 3 – FIGHT

### 5.1 THE ACTUAL EVENT

The hurricane center should be fully manned as guests enter and a team of staff helpers should be on-hand to guide guests to their seating area.

It is again important that an aura of calm, organization and friendliness be present. The playing of ‘easy listening’ music or a couple of televisions showing family type sitcoms may help to reduce anxiety levels.

Staff should be active but not rushing around. Staff should never shout and at all times are to work in a controlled manner. The staff will be watched very closely by the guests so it is extremely important that an air of organization and professionalism be communicated at all times to reduce anxiety levels.

Once the muster has been completed and all guests and staff are in the hurricane center all doors should be bolted shut (except one main exit/entrance door) and boarded (if necessary) except of course for the emergency exit doors.



Keep Calm

The main exit/entrance door *MAY* be left open (depending on the wind conditions) because it provides a little comfort to those who may suffer from claustrophobia and also provides some ventilation. However, when the wind speed picks up then the main door should be bolted and boarded. **Leaving the main door open after all guests and staff are in the hurricane center is a ‘judgement call’ that the Commander can make.**

The Communicator can start to make public announcements when all guests and staff are in the hurricane center. As discussed earlier in the guide, the Communicator’s role during this period is extremely vital. Information to the guests and staff gives them a sense of inclusion and confidence.

The Communicator needs to explain how the hurricane center is setup and where people should go for any assistance. The emergency exits should be explained and the procedure and plan (alternative hurricane center) of where to go in the event that the hurricane center is badly compromised.

The Communicator should start a role call for all skilled guests such as nurses, doctors, firemen, armed forces, police officers, cooks, engineers, technicians and also anyone with disaster management experience etc. The Communicator should send those people (if they are willing) to the relevant areas of the hurricane center and the staff team leaders should give them tasks no matter how small or trivial. There are two reasons for this, firstly because the more people you have working the less likely they are to think about the approaching hurricane and secondly and more importantly because any expertise has the effect of increasing the chances of survival.

The Communicator also needs to explain what to expect in terms of the expected environmental conditions inside the hurricane center with regards to temperature, humidity, noise and air pressure.

Temperature will rise, particularly given the amount of people in a confined space. The humidity will rise as well and the center will become stuffy, hot and uncomfortable. The noise of the wind will be similar to standing next to a jet engine on take-off coupled with loud bangs and possible explosions outside the hurricane center. The air pressure will drop and people should expect their ears to pop.

Further, the Communicator also needs to explain how the hurricane center will react when and if the eye-wall hits the area where the hotel is located. The building may well shake, there may be water ingress and the doors will rattle. If there is a false ceiling that is made up of ceiling tiles the individual tiles may well come loose as well.

The Communicator should also explain that mains power may also be lost (dependent on electrical set-up) and in the event that happens the emergency generator will kick-in and supply electrical power. In the event that the emergency generator stops the portable generators will supply power for lighting, ventilation and all other essential equipment.

The Communicator needs to keep a running commentary of where the hurricane is in relation to the hotel. A member of the communications team (if the internet is set-up – see NHC website) or the Commander will keep the Communicator abreast of the position, speed and strength of the hurricane.

The Commander's role as discussed earlier in the guide is to provide leadership, stability and assurance. The Commander has a number of matters to focus during the hurricane and will be well served by thinking ahead and pre-empting the chain of events.

The Commander should at all times be concentrating on where the hurricane is and be counting down till the impact of the eye-wall. He should have a clear timeline in his/her head and therefore will be ready to start preparing for crisis management, crowd control and hurricane equipment start-up.

The Commander must give an air of authority, calmness and strength without being arrogant, barking orders and confrontational.

The Manager, Communicator and Engineer should provide timely information to the Commander so that decisions can be made early as he/she will have an oversight of how the situation is developing.

The Commander is not to micro-manage the staff and should take a step back from the situation to see the bigger picture.

The Commander needs to be able to listen to the verbal information that is given, weigh up any developing situation and then make a timely decision on how best to act.

Crisis Management and crowd control are paramount to ensuring that the guests (and the staff) remain safe. During stressful situations emotions will greatly increase and if not kept in check will cause panic and possibly injury. The Commander has overall responsibility for ensuring that the hurricane center remains under control and peaceful.

If a guest starts to become irritated there is a strong possibility that this irritation will lead other guests to follow suit. Therefore, the Commander and the team need to be on the lookout for any disturbance among the guests. The Communicator should be dispatched to peacefully resolve a situation should it develop.

As the hurricane approaches there will be a rise in anxiety levels and the noise may start to alarm guests and staff. It is at this point that the Communicator needs to start to provide guests and staff with information about the location of the hurricane, without causing alarm. Timely and well-presented information is the key to keeping the situation under control.

If and when the eye-wall strikes the hotel the guests and staff should have been properly prepared. The time of the eye-wall impacting the hotel is probably the most critical time because if someone is going to panic it will be at this time. This is why it is incredibly important to keep



the guests and staff working as it will take some of the stress levels away as they concentrate on doing their jobs. As some or maybe most guests will not be working, the hotel team must actively engage the guests and provide comfort and support.

Providing support and comfort can be done in a number of ways. From experience, singing songs, holding hands, playing games with children, providing free hugs, making light hearted jokes (tasteful) and of course informative information will all help in keeping guests and staff under control.

As the eye-wall strikes the hotel the Commander should have a good idea of how thick the eye-wall is and what speed the hurricane is traveling at. A simple calculation can then be done to estimate the distance remaining to entering the actual eye.

The eye, as discussed previously, **may** not have any wind and so the hurricane center may experience a period of calm. The calm of the eye of a hurricane can be very deceiving as history has shown that fatalities often occur during this period as people tend to think the hurricane has passed or they have time to take a few photographs.

It is important to relay to the guests and staff that while the wind may have dropped significantly the back-end of the eye-wall (depending on whether it is a direct hit) is yet to come.

Very shortly after the passage of the eye-wall and just entering into the actual eye, the Commander should convene a quick team meeting to assess any structural damage, the situation regarding crowd control, management of facilities (crisis management) and the environment in the hurricane center with regards to environmental conditions.

Once the team meeting has concluded with the major points discussed the decision as to whether to stay in the hurricane center or evacuate to the secondary hurricane center can be made. Generally, it will be known whether or not to evacuate anyway based on any visible damage to the structure.

The distance and pre-planned route from the hurricane center to the alternative center should already be known and the number of guests and staff present will also be known. It is also important to know how long the calm of the eye (if calm) will last. In the event of catastrophic structural damage, the Commander can make a quick decision as to stay or move. It is important that, if possible, that an emergency door or a pre-cut peep hole be cracked open to observe the extent of damage outside.

Before proceeding to the secondary hurricane center it will need to be inspected (if time permits) before the decision to evacuate can be made. The Commander can then make a decision to proceed to the secondary center if at all necessary.

While the latter paragraphs may sound contradictory to venturing outside in the calm of the eye of hurricane, if the main hurricane center is badly damaged and will definitely not sustain another hit from the back-end of the eye-wall; that if all facts are known as to the structural integrity of the secondary or alternative hurricane center, the time available to make the transition with the number of persons present and the route is clear then you should move quickly and calmly.

Always remember that hurricanes can stall or re-curve especially when striking land so it is important to have a good assessment of where the hurricane is located.

If the hurricane center has stood firm after the first strike of the eye-wall, you should never let anyone out of the hurricane center. The only exception to venturing outside should be catastrophic structural failure, fire, severe flooding or a serious medical emergency where professional help can be rendered quickly.

As the back-end of the eye-wall nears the Communicator should inform guests and staff accordingly.

The Commander should again make note of the time to ascertain how long the hurricane center will be affected by the back-end of the eye-wall. This of course will depend on the speed and thickness of the eye-wall.

Once the back-end of the eye-wall has passed the wind speed should begin to drop off. The Commander can make a calculation of estimated wind speed from the NHC data and can then prepare for a reconnaissance team to provide a situation report on the damage outside of the hurricane. This of course should really only be done once a good time period has elapsed. There is no point in rushing matters and if everyone is safe the last thing anyone wants is to create an unnecessary danger to persons or the hurricane center itself. Opening a door and being exposed to 100 mph winds is not a safe option.

Once the wind has dropped to below 50 mph the Commander should assemble the reconnaissance team, which should consist of no more than 4 persons. The team should be made up, if available, of those with armed forces, police force, fire service or natural disaster experience.

The team should always travel in pairs no individual should ever venture out alone. The team should be wearing personal protective equipment and should be given a maximum time of 10

minutes to survey the nearby surroundings. A camera should be taken and photographs taken of the surrounding area so that the Commander can make an informed decision as how to best proceed in the aftermath of the hurricane.

The reconnaissance team should proceed out of the emergency exit and return through the same exit.

If the wind speed allows the emergency doors can be cracked open or fully opened, which will provide some comfort to the guests and staff.

Once the Reconnaissance team returns the preparation of the surviving the aftermath can begin.

## 6 SECTION 6 - PHASE 4 – SURVIVAL

### 6.1 TO MOVE OR NOT TO MOVE

If the hurricane centre has withstood the force of the hurricane then it represents the best place for immediate shelter as there should already be guest and technical services in operation. While this may sound like a no-brainer, there is a real danger people will seek an alternative shelter in the hope of a complete return to an everyday normal environment. Unless the hurricane centre is structurally unsound do not move guests and staff.

The severity of destruction outside the hurricane center will depend on the severity of the hurricane.

### 6.2 SURVIVAL PRIORITIES

The survival priorities are as follows in this order:

- Water
- Medicine and First Aid (if applicable)
- Shelter
- Sanitisation and Hygiene
- Food

### 6.3 WATER

The hotel should have stocked up with an ample supply of water. It is imperative that everyone has access to clean fresh water at all times.

Humidity levels will temporarily rise after a hurricane has passed, which has the effect of making humans perspire more. The loss of water through perspiration will require an increase in the amount of water we would otherwise need to consume.

The water station should have already been set-up but it is important to strongly encourage guests and staff to drink water even though they may not feel like they need it.

Rationing water directly after the hurricane is not advised as it may cause people to panic. Give water freely and again encourage those who refrain from drinking to drink water in any event.

### 6.4 MEDICAL

The hotel should have prepared to cope with injuries and those who require medicine. While specialist medicine may not be available first aid should be given to those who require it.

If there is a nearby room that has not been affected by the hurricane and is in close proximity to the hurricane centre a medical centre can be set-up to provide private consultation and privacy.

A roll-call can be conducted to ascertain whether any guests have any form of medical training. If so they can be employed to assist where necessary.

In the event of major injuries, priority is to be given to medivac the casualties by the quickest means possible. This may involve a helicopter evacuation, whereby the Commander will arrange a safe location for winching the casualty to the helicopter. If the Commander lacks the expertise in helicopter operations for medivac's the number one rule is to follow the instructions of the helicopter flight crew.



Always Follow the Instructions of the Helicopter Crew

## 6.5 SHELTER

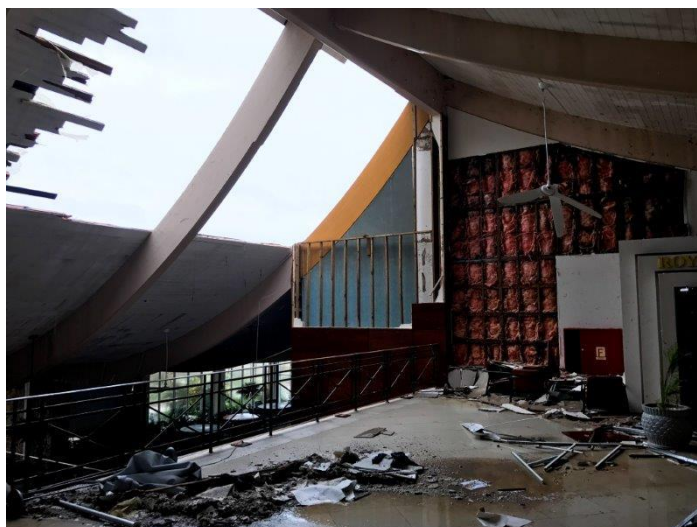
The four main issues that arise from maintaining a shelter in the immediate aftermath of a hurricane are: fire, flooding, maintaining structural integrity and preventing injury from structural failure and debris.

A fire watch is to be set-up on a 24 hour basis. The Commander will arrange for a fire team consisting of no less than 4 people. Fire hoses and extinguishers should be made ready in areas that are determined to have a high risk of fire. It is a good idea to place extinguishers next to electrical lockers or equipment and also near any cooking facilities.

There will be certain areas of the hotel and resort, which have suffered from severe flooding. Under no circumstances are persons to enter these areas as there is grave risk from personal injury. Light flooding (1 – 2 inches) can be dealt with by buckets, bailers and long handle squeegee broom's. The areas can then be mopped dry and sanitized with disinfectant.

Maintaining the structural integrity of the building is a challenging undertaking. It is not advised to prop any part of the building up, whether it is a roof or wall unless either a) it is an emergency or b) the Engineer has made a proper structural assessment.

To maintain dry conditions for the environment tarpaulins can be used, secured in place to divert rainfall.



Exposure to the Elements

Areas of the hotel and resort that have suffered severe structural failure should be restricted to all people. Under no circumstances are guests to re-enter any part of the hotel and resort as there is a real danger that walls and ceilings may have been badly damaged. Simply put a roof may appear to be intact but may have been saturated with rainwater and weakened by the force of the hurricane making it prone to collapse at any point in time.

In the event that a number of guests are qualified as engineers, technicians, builders and craftsman they can be utilised by the Engineer to maintain structural integrity and maintain or bring back utilities online.



Beware of Falling Debris

## 6.6 SANITISATION AND HYGIENE

Sanitisation and hygiene appears at first glance to be somewhat of a lesser issue in the aftermath of the hurricane, however, it is extremely important because in 1 hour bacteria and mould will rapidly grow. Any surface that may come into contact with humans should be washed down with

fresh water (if available), washed, sanitized and rinsed. Surfaces should be cleaned with bleach (Clorox) or water and chlorine (200ppm).

If sunbeds and chairs are being used for sleeping and /or resting purposes then the undersides should be paid particular attention to and not just only the top visible areas. It is what you can't see at first glance which is important and therefore all items should be turned upside down and washed, sanitized and rinsed.



Sanitization in Progress

As stated before, floors should be washed down, sanitized and rinsed. The floors should always be kept dry (as much as you can) to prevent slipping accidents.

A good rule of thumb is to use the floor for feet (shoes) only. Anything such as handbags, towels, personal equipment should be on a raised surface and clear of the floor.



### Feet off the Floor!

Hand sanitizer **MUST** be placed at every entrance, exit, food and water station and all restrooms.

Person/s should be delegated full-time to keep all of the restrooms clean and everyone should be told to wash their hands and sanitize on entering and on leaving without exception.

In the event that the water supply to the restrooms is not available, buckets of rain water can be brought in from outside and poured into the top of the cistern to enable flushing.

If the sewage line is blocked, set up a make-shift restroom block as far away as safely practicable from the hurricane center, complete with buckets and toilet sanitisation materials. Shower curtains from hotel rooms, if available, can be used for privacy purposes. A quantity of water mixed with chlorine can be placed in the bottom of the bucket. When it is time to empty the waste from the bucket, pour any available rainwater into the bucket and top up with a small amount of chlorine and dispose of the waste. Waste can be disposed into a ditch, large hole (preferably 100m away from the make-shift restrooms) or better the sea if it is nearby and only when safe to do so.

Personal Hygiene may not be that important directly in the aftermath of a hurricane, however, as a side note, washing in the rain with a bar of soap is a good idea (if it rains), or if fresh water is available a quick top-to-toe wash with a litre of water is easily achievable.

### FOOD CONTROL

Food must be kept in a hygienic place and full use of the sanitisation procedures above should be adhered to regarding surfaces. Humans can survive for 7 days without food, however, as the hotel and resort should have a plentiful stock of food, provisions can be handed out in a controlled manner.



Food should be of the dried and canned type as previously discussed.

Establishing meal times is important as it gets people into a routine. Breakfast, lunch and dinner should be promulgated at set times taking into account the number of persons present.

In the event that there are large numbers of people, breaking down the meal times into groups will prevent queuing and frustration.



Food Safety Handling

#### COMMAND & CONTROL

A command and control center should be set up as quickly as possible as a main meeting place for the hotel management.

The command and control center can either be in the hurricane center or preferably in a side room, pending damage, adjacent to and in very close proximity to the hurricane center.

The command and control center should be manned by the Manager, Commander, Engineer and Communicator and a small team of mid-level management.

A roll-call of all guests and staff should be taken as quickly as possible after the hurricane has passed and the Manager should relay that list to the Fixer.

The command and control center should always be manned and have an open door policy for guests.

In the event that electrical power and an internet line are available, lap tops can be set up to establish communications with the outside world. The management team should divide itself into groups, such as – management command, muster control, logistics, stores, utilities, communication, safety, human resources, food and beverage etc.

The command and control center is not to be used as a refuge separate from the guests and management must not use it as a hiding place.

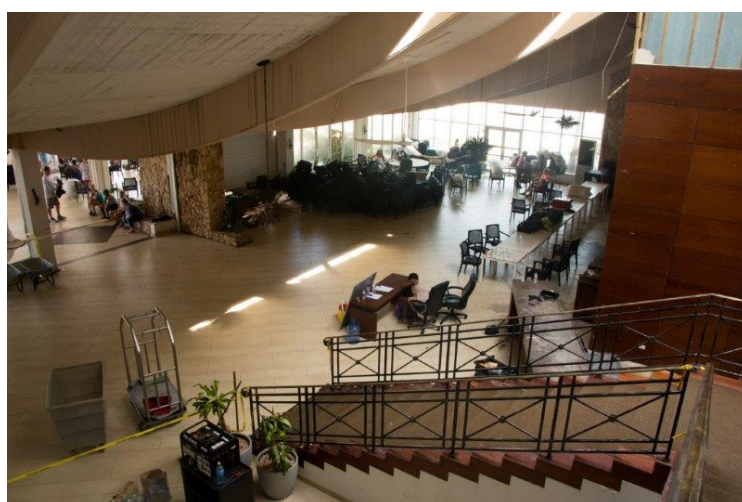
## 6.7 WORKING GUESTS

The guest muster should have taken into account the skill-set of the guests. Therefore jobs / duties can be assigned to those who are willing to assist. No matter how small or trivial the task, all willing guests should be given a job.

Experience shows that assistance from guests is **vital** in surviving a hurricane. A willing guest who perhaps is an Electrical Engineer by trade is invaluable in an emergency. A willing guest who offers services to clean floors is also invaluable to the emergency. The hotel and resort management should be under no doubt that guest's offer a wide range of services, that if properly assigned will greatly increase the chances of survival and also reduce anxiety and panic levels.



Lobby Before



Lobby 12 Hours After

Experience has shown that the strangest professions that you may not think would be good in an emergency are in fact a real source of ‘outside-of-the-box’ thinking and will greatly assist in survival.

Working guests who assist do not get extra rations or are treated different in any way shape or form from any other guest. Fight or flight mechanisms in people are complicated and to draw conclusions on why some people help and others don’t requires an in-depth understanding of crisis management and psychology.

Guests who do not want to work or cannot work should be treated with dignity and respect.

In short, never ever underestimate the skill sets of the guests; they are proven life-savers in an emergency.



Guest Workers - Saviors

## 6.8 STORES

A stores area should be set-up for health and hygiene materials, hardware, tools and equipment.

A storekeeper should be assigned to hand out materials.

Assistant stores handlers can be assigned to fetch and carry stores.

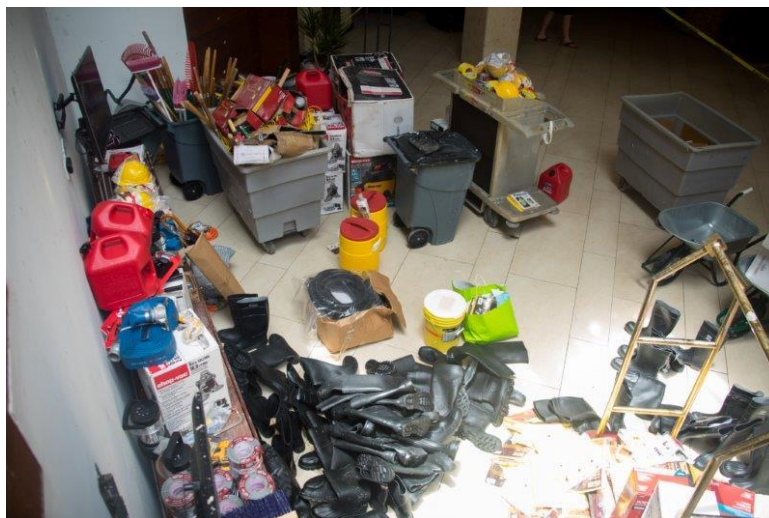
The stores area can either be in the hurricane center or in a nearby adjacent area.

Stores should be brought to the stores area from around the hotel and resort only if it is safe to do so.



Stores Area

Never let stores be taken without permission and if in any doubt the storekeeper can contact the Commander and/or Engineer.



Stores - Hardware

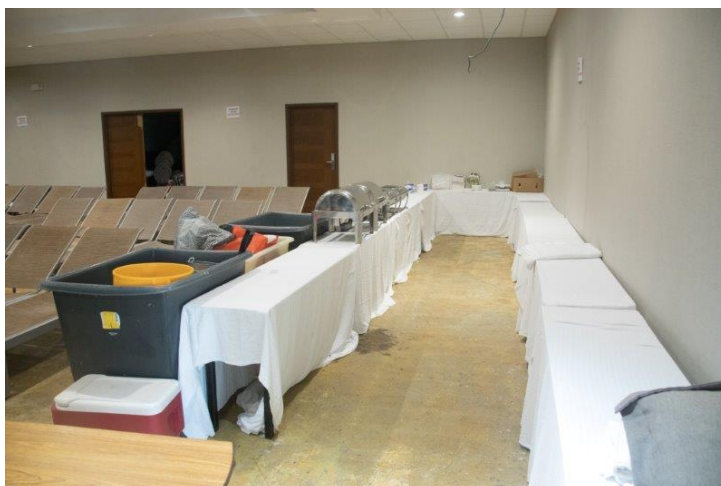
## 6.9 FOOD & BEVERAGE

Food and Beverage facilities are important in maintaining a calm and peaceful situation. While food is important purely as a means of nourishment, it also represents comfort. The majority of people in the first 24 hours that are given a choice between a hamburger and a liter of water will chose the hamburger.

Therefore, it is important to understand that guests will prioritize food over water in the first 24 hours.

For the first meal time, there will be a rush for the food. The hotel staff should always go last, but, it is especially important to tell staff prior to the onset of the hurricane that some people will

act out of panic and to expect irrational actions concerning food. I re-emphasize the guests may eat out of comfort rather than hunger.



Setting up for Meals

Always supply water with every meal and always encourage water consumption. It is advisable that fruit juices, carbonated drinks, soft drinks should be replaced with bottles of still water; that way guests do not have a choice.

#### 6.10 INFORMATION DESK

Setting up an information desk for guests is also important as it stops rumours, conjecture and panic. The Communicator is to assign someone to be in charge of the information desk, which should normally be a front of house staff member or a person from the entertainment team.

The desk is to be fully manned at all times and a flow of information should come from the command and control center, particularly muster control.

Never lie to the guests and always give them an honest but diplomatic answer.

If a question cannot be answered immediately do not lie, tell the guests that you will get back to them when an answer can be sourced from the Manager or Commander.

It helps to have a staff member who is assigned as a social and welfare host who is on-hand to comfort and reassure worried guests.

#### 6.11 CHILDREN'S AREA

If a number of children are present responsible staff member's can be assigned as 'children's' hosts'. In short do not allow children to roam around the hurricane center or any nearby area unattended.

A play area can be set-up, if a room can be found. Always ensure that first it is cleaned, sanitized and rinsed down.

A selection of children's games can be used to keep them busy.

In general children are pretty good during an emergency as their psychological awareness levels are different. They may think that it is a game, depending on their age, and their reaction to the event will be completely different.

## 6.12 COMMUNICATION FOR FAMILIES

The Manager can relay and confirm to the Fixer regarding the number and names of all persons present or not as the case may be.

The Fixer and his/her staff can then relay to the families of the guests and staff. The Fixer should have been presented with a full guest and staff list with emergency contact details prior to the onset of the hurricane.

Individual guests are not to use the satellite phone for calling their families.

Guests in dire need to phone home can either use their own cell-phone, if there is a network, or a short phone call can be made on their behalf by muster control. While this may sound harsh, guests using hotel (satellite) air-time may result in many other persons equally wanting to do the same. This ties-up the phone/s and may result in real emergency situations, if they develop; becoming delayed, frustrated or in the worse case prevents the ability to save lives. People at home will not die if they do not hear from a loved one, but someone in an emergency may do if the satellite air-time is used up or the cell network is overloaded.

Once contact has been established between the Fixer and families, it can then be relayed to muster control and then on to the guests and staff.

Overall control should be passed to the Manager once the situation has settled, so that the Commander can create a stable environment and assist the Engineer in the aftermath.

## 7 SECTION 7 - PHASE 5 – AFTERMATH

### 7.1 ROUTINES

It is important to establish routines as soon as possible, which should have the effect of reducing anxiety levels.

After the first 12 hours hotel management should set working and resting hours.

Establishing duties and rota's not only keeps the staff and guests busy but also enables hotel and resort management to actually manage and thus keeps them busy as well.

The more active people are the more they forget about their surroundings and the past hurricane, which obviously again reduces anxiety and stress. There is an old saying about 'idle hands make idle minds' and so to conquer fear, keep everyone busy.



Guest and Staff Workers

### 7.2 MAINTAINING A HURRICANE CENTER AND REFUGE

The hurricane center and any nearby buildings that are used to maintain life will require utilities and maintenance.

The Engineer and Commander should separate themselves from the Manager with regards to managing the 'normal' running of the hurricane center. The only exception to this is that the Commander needs to maintain crowd control and crisis management issues.

The Engineer and Commander should concentrate on restoring utilities and reducing the risk of fire, flooding, environmental hazards and structural integrity.

Fires present a severe hazard and so the Commander should have already organized a fire team.

Debris will present a hazard and it can be cleared away with a digger.

The Engineer can direct a flood prevention team to shore up flooding defences.

Bracing walls and ceilings should only be carried out under the supervision of a qualified structural engineer.

### 7.3 DEBRIS AND ENVIRONMENTAL DANGERS

Debris represents a hazard as often broken material will have sharp edges.

Never walk among the debris if it can be helped as there will also be hidden dangers that cannot be seen such as nails, glass and other sharp contact hazards.

Never walk on the debris as it will be loose and prone to movement when walking on it.

Use a digger or forklift to remove debris if you need to create a pathway or find an alternative route.

Use 'Tiger Tape' (yellow and black chequered tape) to 'rope off' and mark walkways and routes.

Never enter into flood water strewn with debris.

Never enter into alleyways or corridors where you cannot see the floor.

Never enter into alleyways or corridors where the ceiling has collapsed.

If there is a chemical, sewage or gasoline smell stay well clear of the area.

Never touch electrical cabling especially where water is present.

Never allow anyone to smoke near debris. It is advisable to create a smoking area which is clear from debris, especially wood debris or where there is a smell of chemicals and/or gasoline.

In the aftermath of a hurricane where temperatures are rising quickly wooden debris that is strewn around can be likened to a tinder box ready to catch fire.

In the event that the hotel or resort is near the ocean a storm surge (before and after the hurricane) is likely whereupon the sea and wave height will be greater. The ocean will appear to move faster than normal. It is not uncommon for hotels and resorts to continue to flood due to a storm surge from the ocean. Special attention should be paid to the height of the hotel and resort above sea level.

It is also not uncommon for the entire beach to either disappear just prior to the onset of the hurricane or to have disappeared afterwards.

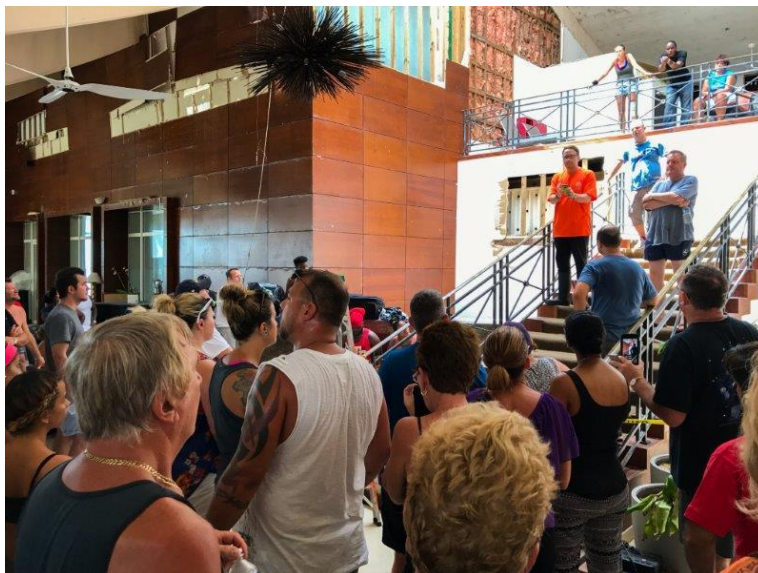
### 7.4 BRIEFINGS

The Communicator should conduct briefings every morning and late afternoon to the guests.



The briefings are to keep guests and staff aware of the latest news and events with regards to the operation of the hurricane center and the oncoming evacuation.

The Commander should be present when the Communicator is briefing the guests in order to keep an air of order and calm.



A Briefing

The Communicator should only give facts and not raise hopes with false promises.

The time of the briefings should be promulgated throughout the hurricane center and all guests are to be encouraged to attend.

The questions that the guests will have may be difficult to answer and the Communicator needs to be able to think on his feet and remain positive at all times.

Arguments may start to break out and so the Communicator needs to be prepared to be able to deal with frustrated guests. The Commander should only step in if the situation starts to deteriorate. It should be remembered that shock and anxiety will be extremely high so keep answers brief and factual.

The question that will be most asked will be concerning the time of evacuation from the hotel and resort. Questions regarding flights automatically cause worry and high stress among the guests. Do not make false promises; state only the facts as they are known.

It is very important that the Communicator remains extremely positive throughout the aftermath.

## 7.5 SCAVENGING - (CAUTION!)

Scavenging is a necessary function to maintain the hurricane center and refuge after a category 5 hurricane.

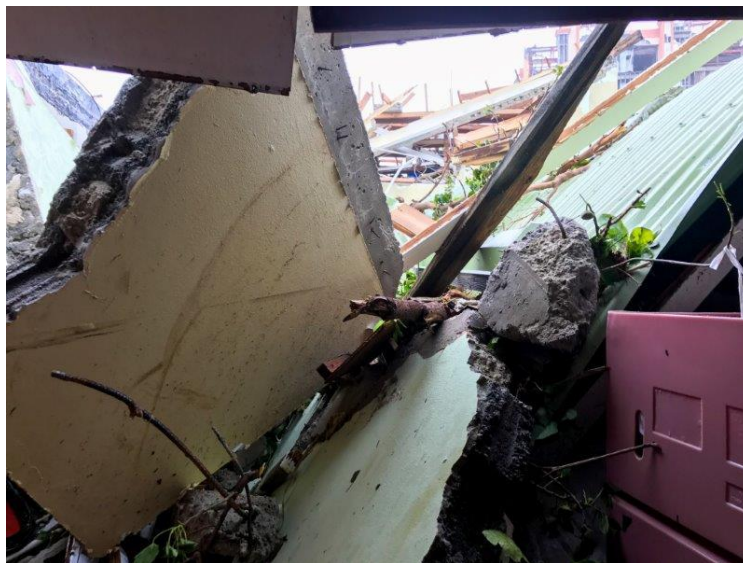
Sending small teams out to find equipment and stores can be a dangerous undertaking.

In general it is highly advisable not to steal as this is seen as looting. However, as looting is mostly concerned with high value materialistic items, the search for life-saving equipment is somewhat different.

If in any doubt as to whether equipment and stores is the property of another, it is wise to consult the Commander and Manager first so that they can contact the owner or make a decision as to the risk.

In the event of a category 5 hurricane many local residents will have evacuated prior to the onset of the hurricane, however never enter private property under any circumstances.

Scavenging in a structurally unsafe building is not wise; however, the Engineer and/or Commander can always make a decision as to whether the risk is worth it depending on the urgency of the equipment or stores.



Be Careful

## 7.6 NEARBY BUSINESSES

Always assist nearby businesses as a matter of goodwill but also they will have a variety of different resources on hand, which can assist in maintaining the hurricane center and refuge.

Always give freely, within reason, to local businesses and be willing to accept them into to the hurricane center.



Look after nearby Businesses

## 7.7 LOOTERS AND SECURITY

Looters present a very serious threat to the safety of guests and staff. Never approach looters and never confront them. As previously discussed most looters will steal high value materialistic goods in the first 24 hours that are completely worthless.

Money has very little value in an emergency situation. Shops and businesses will be closed and so money cannot be exchanged for goods.

Electronic goods such as televisions, laptops and cell phones are useless when there is no electrical power or signal.

After the first 24 hours, water and food will become the priority of the looters and they will search aggressively for a source. In the event that looters start to approach the hotel and resort **call the police**. If police are not available a good security detail may buy time until the police are able to attend.

Water and food can be brought to an area outside the hotel and resort if the situation with looters becomes serious. The looters can be held at 'arms length' until such time as the police can assist.

A security team should have been assembled prior to the hurricane and a plan drawn up as to how to secure the perimeter of the hotel and resort. A regular presence is sometimes enough to ward off looters.

Blocking secondary access points to the hotel and resort by either moving vehicles as a blockade or using a digger to pile debris up is a good way to prevent unauthorised access.

In the event that there is an electrical power source, floodlights can be used to illuminate possible access points to the hotel and resort.

The coloured wrist bands that were given out during the initial muster before the hurricane must be worn by every guest and hotel staff member. The Communicator should tell the guests and staff at the briefings to always wear their wrist bands.

The Communicator should tell guests not to leave the hurricane center or venture out of the hotel and resort premises.

## 7.8 REFUGEES

After the first 24 hours word will spread that the hotel and resort is safe place with water and food. Refugees may start to turn up.

It is easy to differentiate between a looter and a refugee. Most refugees are in family groups.

Wrist bands must be given to all refugees. Refugees must be treated in exactly the same way as the guests.

The refugees are to be briefed on the operation of the hurricane center and must abide by all the rules laid down in the hurricane management plan.

Full details of all refugees arriving must be recorded and sent to the local government authorities.

## 7.9 EVACUATION

An evacuation can begin once the Fixer has established the condition of the local infrastructure with regards to roads, sea ports and airports. The Fixer can then make a plan of action and arrangements can start to be made with various travel businesses.

The Fixer should take into account the likelihood of a successful evacuation with regards to safely moving guests and staff to the departure ports.

There is also little point in moving guests to a departure port if the guests and staff have to wait for extended periods in the departure port before evacuation from the area.

While hotel senior management may see value in getting guests and staff away from the hotel and resort complex, guests and staff who are continually frustrated by waiting extended periods may end up returning to the hotel and resort complex. So the Fixer should have a clear idea of the likelihood of FULL successful evacuation. If the guests and staff are safe and water, medicine, shelter and food are not in short supply then it may be best to wait until such time as guaranteed evacuation can be confirmed.

Giving people false hope in the chance that they may be able to get a seat on a plane or a bus can lead to desperation, resentment and resignation.



Happy Evacuee's

Effective communication between the airlines, cruise lines and local bus providers is essential in being able to evacuate large numbers of people. It doesn't really matter how long it takes (within reason) for a person to be able to finally reach home as long as they safely on their way.

### 7.10 EMERGENCY EVACUATION PRIORITY LIST

In order to determine which guests and staff go first when it comes to evacuating the hotel and resort an emergency evacuation priority list needs to be drawn up. There is no official set guidance on the order of persons are to be evacuated, however, experience has shown that the below list works.

#### 7.10.1 **Category 5 and 4 Hurricanes** - Recommended List, (Guests = G, Staff = S)

- Injured and Sick – S+G
- Mother with Children below 18 – S+G
- Elderly female 65 and above, oldest female first– S+G
- Elderly male 65 and above oldest male first – S+G
- Women 64 and below, oldest female first - G
- Men 64 and below, oldest male first – G
- All others - S

It should be noted that families will need to be split up, particularly the fathers from their families. While it is true that women are mentally stronger than men, physically men are stronger than women. The above list is therefore based on survival chances rather than family ties.

In the event that partners wish to stay with their loved ones and not be split up, they will lose their place in the list and travel when it is their partners turn. In that case the next person to be evacuated will automatically move up the list.



### Heart Breaking Decisions

Persons wishing to give their place up may do so, however, swaps out of sequence are not allowed and therefore the next eligible person on the list will automatically move up.

Those guests who are physically impaired should not be treated any different from any other person unless the physical impairment requires a specialist carer or facilities. However, a carer may be sent at the same time for assistance purposes.

When it is time to read out the emergency evacuation priority list, the reasoning behind the order of evacuation can be stated to the guests.

The Communicator needs to read out the evacuation list to the guests and staff. This is an especially hard task and very traumatic as families will be asked to split up.

The Commander needs to stand next to the Communicator when the list is read out.

For category 1, 2 and 3 hurricanes, family units should stay together. The recommended emergency priority evacuation list is:

#### 7.10.2 **Category 1, 2 and 3 Hurricanes - Recommended List, (Guests = G, Staff = S)**

- Injured and Sick – S+G
- Family units with Children below 18 – S+G
- Couples 65 and above, oldest female first plus spouse – S+G
- Couples 64 and below, oldest female first plus spouse – S+G
- Single women 64 and below, oldest female first- G
- Single men 64 and below, oldest male first – G
- All others - S

The main goal in evacuating groups in an emergency is simply to increase the chances of survival.



Keep Faith - Help is on the Way

### 7.11 MEDIA CONTROL

In the world of social media, there is not a lot that can be done to prevent guests and staff from texting, sending pictures, updates and tweeting etc.

It is advisable to ask both guests and staff to be careful and sensitive as to what they send out from their social media accounts.

Social media postings involving death and injuries should be avoided at all times. Insensitive messages can cause great distress to family members at home.

Staff can be asked not to put anything out on social media, however, in reality, it will happen. This should not be seen as anything but normal behaviour in an emergency situation.

### 7.12 MANAGING YOURSELF

Looking after other people in an emergency situation is highly stressful and very exhausting, but it is also a privilege and an honour.

The hardest moment for anyone who has responsibility in an emergency is when you have looked after everyone else, who will then look after you?

After you have fought the fight and the guests and staff members have been evacuated, shock, guilt, loneliness and the beginnings of post-traumatic stress disorder (PTSD) will start to creep in.

Staff members who try to comprehend the enormity of their experience when guests are eventually safe and sound and the hotel and resort is empty will find it virtually impossible as primarily a 'flight' mechanism has kicked in to the individual.

Seeking help from a psychologist specialising in PTSD will enable the person to rationalize and understand how their life has changed.



The End



## 8 Acknowledgements

I would like to take this opportunity to say thank you to the following people:

### Author and Contributing Authors

Captain Nathan Mills – Training for Hurricane Preparedness, Firefighting, Crowd Control, Crisis Management and Damage Control – Mills Maritime Ltd., Email: [nmills72@gmail.com](mailto:nmills72@gmail.com)

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### Special Thanks:

Johan Halvarsson – Manager

Matthew Shepherd – Communicator

Saro Spadaro – Fixer

Enrico Bacchilega – Engineer

Walter, Louis and Merlito - Pananampalataya

Jack ‘Super Jack’ Leithliter - Wizard

Jonathan and Shari Fallwell – Miracle Workers

The Entertainers - Spirit

The Maine Posse – Hot wiring, demolition and construction experts

To: Jennifer, Shay, Michelle, Lisa, Monica, Larissa, Mayra, Lesley, Lauren, Karlijn, Lauren, Karen, Carla, Sarah, Deborah, Sherry, Danielle, Joanne, Maeghan, Julia, Ellie, Meena, Dawn, Rachelle, Pauline, Martha, Bones, Dewi, Erica, Kristin, Yvonne, Silvia, Desirae, Leteshar, Martha – Mental Strength

To: Joe, Dewayne, Bas, Rob, Nigel, Yanni, Gavin, Dalton, Martin, Sergio, Robin, Adam, Gregg, George, John, Peter, Scott, Ryan, Mike, TR, Niels, Tim, Chris, Kevin, Benjamin, Truss, Michael, Wally, Dan, Elvis – Tough Guys

To all the staff for their professionalism, team work and commitment

To all the guests for their belief, hard work and patience

To Samaritans Purse – Faith

To Sint Maarten – Keep up the fight

To my wife – I love you



## **DISCLAIMER**

These materials are intended to assist employers, workers, and others as they strive to improve health, safety and the environment in the event of a tropical cyclone or any other tropical revolving storm. While I attempt to thoroughly address specific topics, it is not possible to include discussion of everything necessary to ensure a healthy and safe working environment in a guide of this nature. Thus, this information must be understood as a tool for addressing the hazards caused by tropical cyclones, rather than an exhaustive statement, which are/may be defined by local, national and international statute, regulations, and standards. Likewise, to the extent that this information references practices or procedures that may enhance health or safety, but which are not required by a statute, regulation, or standard, it cannot, and does not, create additional obligations legal or otherwise. Finally, over time, any regulator may modify rules and interpretations in light of new technology, information, or circumstances; to keep apprised of such developments, or to review information on a wide range of safety, health and environmental topics, you are advised to contact and visit regulatory offices and web sites.

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