

PORT OF HOUSTON AUTHORITY

**BARBOURS CUT TERMINAL TROPICAL
STORM AND HURRICANE PREPARATION
PROCEDURES**

UPDATED MAY 2010

Tropical Storm and Hurricane Preparation Procedures

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Hurricane season on the Gulf Coast extends each year from June 1 through November 30.

Every year, prior to the onset of Hurricane season, BCT Managers and critical staff will meet to review the Terminal Hurricane Procedures, and amendments will be made as necessary. Maintenance will perform an inventory of emergency supplies and purchase anything we do not have on hand or that needs to be replaced. Outside maintenance will be responsible for checking the facility to make sure all portable buildings are properly secured. All terminal users and outside warehouses will be notified in writing to be sure that extra care be taken in their usual housekeeping and securing of their facilities.

When the U.S. Weather Service predicts a tropical storm or a hurricane to affect the Houston/Galveston area, a strategy meeting will be called for all Managers and critical staff to discuss specific plans. A person from each department will be assigned to coordinate preparations for their area. Employees with questions about attendance during a storm period should be referred to their managers. Each manager should prepare a list of his/her employees and a telephone number where they can be reached after the storm. Employees should also be told to call the following hotline number to find out when they should return to work: 713-670-2870.

The terminal will continue to receive and deliver cargo as long as it is safe to do so, but if a storm is imminent the following should be used as a guideline. Remember, this time line is only a guide, and it could be moved forwards or backwards depending on the severity and the expected arrival of the storm.

It should be noted that PHA retains the right to decide when to shut down vessel operations and put its equipment into storm position. Refer to the BCT high wind policy.

There are several web sites that can provide us with up to the minute weather information. Here are two that we can log onto: www.weather.com (The Weather Channel), and www.khou.com (Channel 11 in Houston). Local television newscasts and news radio also provide extensive coverage of any storm that may threaten our area (TV channels 2, 11, 13, and 26; radio station 740 AM).

DEFINITIONS OF HURRICANE CONDITIONS

(Standard Federal Designations)

STORM TERMINOLOGY

When atmospheric conditions develop to the point of rotary circulation with wind speeds (sustained) above 35 knots (39) miles per hour, the National Hurricane Center in Miami officially identifies and tracks the storm. **Please note that a storm need not be considered a hurricane for the COTP Houston to enact the provisions of the severe weather plan.**

TERMINOLOGY	WIND SPEED
Gale Force Winds	Above 39 MPH (35kts)
Tropical Storm Force Winds	Cyclonic winds 39 to 73 MPH
Hurricane Force Winds	Above 74 MPH (66 kts)

STORM ALERT STATUS

NWS Alert	When Issued
Tropical Storm Watch	Tropical Storm Force Winds predicted to impact the watch area within 36 hours.
Tropical Storm Warning	Tropical Storm Force Winds predicted to impact the warning area within 24 hours.
Hurricane Watch	Hurricane Force Winds predicted to impact the watch area within 36 hours.
Hurricane Warning	Hurricane Force Winds or a combination of dangerously high water and very rough seas, predicted to impact the warning area within 24 hours.

HURRICANE CATEGORIES

The strength, or intensity, of a hurricane is measured by its maximum sustained winds. Hurricanes are categorized as follows:

HURRICANE CATEGORY	SUSTAINED WIND SPEED
Category One	74-95 mph winds
Category Two	96-110 mph winds
Category Three	111-130 mph winds
Category Four	131-155 mph winds
Category Five	over 155 mph winds

STORM SURGE

Storm surge, also known as “tidal surge”, is the pressure-induced movement of large quantities of water ahead of and during hurricane passage. Based on the storm intensity (Category), elevation and exposure to winds, storm surge can be significant and dangerous. As an example, the following chart shows the average height in feet above mean sea level that storm surge is predicted, according to the National Weather Service. These storm surge heights are further impacted by the stage of the tide at the time the hurricane approaches. To these values the normal height of the tide would have to be added. Low tide situations minimize the impact of the storm surge while a high tide situation increases the impact of the storm surge

STORM CATEGORY	STORM SURGE (feet)
Category One	4-5
Category Two	5-8
Category Three	9-12
Category Four	13-18
Category Five	18+

PORT HURRICANE CONDITIONS

Port Hurricane conditions are set by the COTP, and are used to describe, generally, restrictions needed to protect life, vessels, facilities, ports, and the environment for severe weather. Port Hurricane Conditions will be changed as the threat of severe weather increases, or as storms approach our area.

PORT HURRICANE CONDITION	WHEN SET
Condition 5	Seasonally, 1 Dec. – 31 May
Condition 4	Seasonally, 1 June – 30 Nov.
Condition Whiskey	Sustained Gale Force winds are predicted within 72 hrs.
Condition X-Ray	Sustained Gale Force winds are predicted within 48 hrs.
Condition Yankee	Sustained Gale Force winds are predicted within 24 hrs. and Hurricane Conditions are likely to follow.
Condition Zulu	Sustained Gale Force winds are predicted within 12 hrs. and Hurricane Conditions are likely to follow

Port of Houston / Galveston Hurricane Port Conditions

PORT HURRICANE CONDITION	ACTION REQUIRED by COMMERCIAL OCEANGOING VESSELS and BARGES OVER 500 GRT
<p>Condition Whiskey</p> <p>(Alert—72 Hrs)</p>	<p>To enter, transit or remain within this safety zone, vessels must comply with the following requirements:</p> <p><u>Report Intentions to Marine Safety Office Houston-Galveston:</u> All commercial vessels and ocean-going barges greater than 500 gross tons must advise the Captain of the Port of their intent to remain in port or depart. If intending to remain in port, all vessels must complete and submit “Remaining in Port Checklist” for approval.</p> <p><u>Closure of Departure/Arrival Windows:</u> Ocean-going ships and barges over 500 gross tons departing the port must depart no later than 12 hours prior to the arrival of gale force winds (Port Condition Zulu). Vessels bound for COTP Houston-Galveston Zone ports, which are unable to arrive 12 hours prior to the arrival of gale force winds are advised to seek an alternate destination.</p> <p><u>Cargo Operations/Bunkering:</u> All transfer operations shall cease upon arrival of sustained 40 mph winds. All vessels intending to leave port and requiring bunkers shall plan accordingly to ensure preparations for departure are complete by 12 hours prior to the arrival of gale force winds from the storm.</p> <p style="text-align: center;">Page 5</p>

<p>Condition X-Ray</p> <p>(Readiness—48 Hrs)</p>	<p>To enter, transit or remain within this safety zone, vessels must comply with the following requirements:</p> <p><u>Report Intentions to Marine Safety Office Houston-Galveston:</u> All commercial vessels and ocean-going barges greater than 500 gross tons must advise the Captain of the Port of their intent to remain in port or depart. If intending to remain in port, all vessels must complete and submit “Remaining in Port Checklist” for approval..</p> <p><u>Closure of Departure/Arrival Windows:</u> Ocean-going ships and barges over 500 gross tons departing the port must depart no later than 12 hours prior to the arrival of gale force winds (Port Condition Zulu). Vessels bound for COTP Houston-Galveston Zone ports, which are unable to arrive 12 hours prior to the arrival of gale force winds are advised to seek an alternate destination.</p> <p><u>Cargo Operations/Bunkering:</u> All transfer operations shall cease upon arrival of sustained 40 mph winds. All vessels intending to leave port and requiring bunkers shall plan accordingly to ensure preparations for departure are complete by 12 hours prior to the arrival of gale force winds.</p>
<p>Condition Yankee</p> <p>(Warning—24 Hrs)</p>	<p>No vessels may enter, transit or remain within this safety zone without the permission of the Captain of the Port. The following additional requirements are in effect:</p> <p><u>Cease Cargo Operations:</u> All transfer of cargo operations shall cease when wind speeds reach 40 mph.</p> <p><u>Disconnect Transfer Hoses:</u> Disconnect all transfer hoses and loading arms when wind speeds exceed 50 mph.</p> <p><u>Vessels Desiring to Depart Port Must Arrange Immediate Departure:</u> Movement of all vessels and barges over 500 gross tons desiring to depart the port must contact the Captain of the Port at (713) 671-5100 (ext. 0) to arrange immediate departure.</p> <p><u>All Vessels Must be at Mooring Site and Follow Approved Remaining in Port Checklist:</u> All commercial vessels and barges greater than 500 GT remaining in port must be at their mooring site in accordance with their “Remaining in Port Checklist” as approved by the Captain of the Port. Any such vessels that haven’t submitted checklists must fax them immediately.</p> <p><u>Vessels Bound for This Port:</u> Vessels bound for this port are advised to seek an alternate destination..</p>
<p>Condition Zulu</p> <p>(Max Prep—12 Hrs)</p>	<p>Port is closed. No terminal, facility, or vessel operation permitted without COPT approval. Hurricane landfall expected in 12hrs..</p>

Personal Preparations

As a hurricane approaches, all HT employees will be expected to assist with preparing the terminal and buildings for possible wind and water damage. Understandably many of us, if not all of us, will be thinking of our families and homes, and what needs to be done to prepare them as well. Be assured that we will all be released from our work areas in plenty of time to prepare our families and homes, although we encourage everyone to take the time to assemble a hurricane kit and plan your personal evacuation route ahead of time.

Go to **www.texasonline.com/** then click on “Emergency Preparedness”. This will take you to the page that has all the information on preparing for a hurricane, including evacuation with the contra-flow routes. You and your family should become familiar with the site and the information on it.

Once a Hurricane is in the Gulf

A hurricane watch is in effect. Condition Whiskey / The storm is 72 hours from Houston/

- 1) Begin coordinated team communication with Port, WGMA, USCG, Pilots, Trucking Companies, and Terminal Users
- 2) Verify again emergency equipment inventory and supplies to ensure adequate quantities of rope, plywood, masking tape, flashlights, batteries, cables, turnbuckles, etc. required for lashing down cranes, heavy equipment, and loose items that must remain outside, and boarding up and taping of windows.
- 3) All warehouse users and the outlying empty yards will be notified to begin securing their areas. 4) Call all vendors to remove or pump out Port-a-Potties, waste bladders, waste oil, grease traps, and dunnage and scrap metal.
- 5) Critical files on computers should be backed up onto diskette and stored in a safe place.
- 6) Any loose gear not in use on the terminal should be moved inside or secured.
- 7) Empty yards on the terminal will be told to check to make sure all container doors are closed and secured.

8) A small amount of canned goods, drinking water, and canned drinks should be purchased and stored in case people get stranded on the facility during or after the hurricane. These will be stored at the fire barracks.

9) A safe location should be designated as the storm center. The current location is in the C3 Administration Building.

10) Each department will inspect their areas of responsibility for compliance.

11) Return any equipment rented by PHA that is not being used.

12) Outside maintenance should pump down all lift stations.

Condition X-Ray / The storm is 48 hours from Houston/

1) Continue coordinated team communication.

2) Move non-essential equipment to a safe location. Service them with fuel, lubricants, etc. so that they can be used after the storm.

3) Make ready all portable generators, air compressors, and portable radios.

4) Fill mobile fueling rigs and keep them topped off.

5) Lash down non-essential gear and equipment that must remain outside, recheck lashing portable buildings. The yard cranes tie downs in C4, C5, and C6 can be used for early lashing due to the location of the tie downs. (See diagram of yard crane tie downs)

6) Any daily use materials that carry a warning label (solvents, cleaning agents, paint, pesticides, etc.) should be put into their lockers and secured.

7) Begin to stack loaded containers into safe positions on the pad. Begin to stack down the empty containers.

8) Each department will inspect their areas of responsibility for compliance.

Condition Yankee / The storm is 24 hours from Houston

- 1) Continue coordinated team communication.
- 2) Move desks, files, office equipment, and furniture away from uncovered windows. Put all papers in file cabinets or drawers along with telephones.
- 3) Computers, copiers, and fax machines should be moved to a safe location. Make sure they are marked with names and departments to hasten redistribution after the storm.
- 4) Continue to secure terminal equipment. Wharf cranes and yard cranes should be put into their tie downs unless they are in use. Terminal crane operators should be used to move the yard cranes into position over the tie downs. Management will determine when and where to tie down on a crane-by-crane basis throughout the day. Terminal managers will coordinate with Maersk when cranes go into tie-downs in C5.
- 5) Fill extra drums with fuel, lubricants, water, hydraulic fluids, etc. and stow in a safe location for use after the storm.
- 6) Service all vehicles with fuel, etc.
- 7) Board up or tape all windows.
- 8) Each department will inspect their areas of responsibility for compliance.

Condition Zulu / Storm is within 12 hours of Houston

- 1) Continue coordinated team communication.
- 2) Secure all electrical power sources not required for minimum operation. Electrical equipment should be turned off and unplugged, lights should be turned off except for areas that might be manned.
- 3) All equipment should now be secured in a safe location; all cranes should be in their tie downs.
- 4) All stacking down of containers left on the terminal should be complete.
- 5) Each department will inspect their areas of responsibility for compliance.
- 6) All other hurricane preparations should be completed. Excuse all non-essential personnel.

Condition Zulu / Storm is within 6 hours of Houston

- 1) Continue coordinated team communication.
- 2) Storm coordinators should make their last check of the facility to ensure that nothing has been missed. Any last minute preparations should be completed. Port Police vehicles should be parked in a designated safe area.
- 3) Prepare to ride out the storm. If you are required to be on premises you should remain indoors. Be sure you have emergency supplies (radio, flashlight, batteries, etc.). Monitor the weather information.

Post storm operations

- 1) Re-staff entrances to keep out vandals and sightseers.
- 2) Survey for damage or injured personnel. Assist any injured as necessary.
- 3) Assess damage of terminal property, provide to the Terminal Manager a written report accompanied by photographs when possible.
- 4). Prioritize cleanup and repairs:
 - A. Remedy dangerous or hazardous conditions
 - B. Remove debris
 - C. Temporary repairs
 - D. Permanent repairs

All repairs to the terminal and the cost of the materials should be documented on a FEMA expense form for possible reimbursement.

- 5) Advise Communication Team of port status and plans after the storm.

SECURING EQUIPMENT AND MACHINERY

Wharf cranes: Cranes 1, 2, 5, 6, 7, 8, 9, and 10 should be boomed up and the legs pinned into position on the dock, and put into the tie downs. Cranes 3 and 4 should be boomed down into a 45-degree angle, the trolley must be pinned into place, the legs pinned into position on the dock, and put into tie downs. The spreader bars should be lowered all the way down with the full weight of the bar on the dock. All baloney cables should be tied off so they won't get blown from the basket.

Yard cranes: The yard cranes should be put into the tie downs. We have 34 tie downs for yard cranes on the terminal (see diagram). The spreader bars should be locked into a loaded container on the ground with the full weight of the bar on the container. Each crane should be topped off with fuel.

Top loaders and pencils: The maintenance manager shall decide a safe area for storage of this equipment during a hurricane. The spreader bar should be locked into a loaded container on the ground with the full weight of the bar on the container. Each piece of equipment should be topped off with fuel and the brake set.

Trucks and baskets: The maintenance manager shall decide a safe area for the storage of this equipment. Trucks should be topped off with fuel and the brakes set.

Other gear: Any loose equipment or loose gear should be moved indoors or secured to remain outside. All drums of oil, hydraulic fluid, solvents, or other liquid stored in drums should be moved to a safe location to prevent leakage or spillage.

Prior to hurricane season

Inventory emergency equipment, Order any shortfall in emergency equipment back up computer programs and store in safe place, Notify outside empty yards, Notify warehouses, Get the names of key contact people, Secure outside buildings, Clean out tie downs, Secure supplies at fire barracks

When a storm is imminent

Secure loose gear and equipment, Top off all equipment with fuel, refill fuel trucks, Board up windows, Stack down containers, Stow electrical equipment in safe place, Put cranes and RTG's in tie downs, Designate safe building for anyone riding out the storm

After the storm

Survey and note damage, take pictures if necessary. Report damages to managers, Inspect equipment for damages and safety of operations, Make necessary repairs, Clean terminal of debris, Re-staff terminal

RESPONSIBILITIES OF STEVEDORES AND FREIGHT HANDLERS

Stevedores and freight handlers at Barbour's Cut Terminal are required to have a Hurricane Preparation Plan in place and are required to prepare their areas prior to the start of the storm season and in the event that a storm is imminent.

The following is a list of what The Port Authority expects from stevedores and freight handlers at all times, especially during the hurricane season:

- Keep areas free of debris.
- Remove hazardous waste in a timely manner.
- Notify the Port Authority immediately of malfunctioning doors and/or structural problems within the warehouses.
- Secure portable buildings with tie downs

In the event that a storm or hurricane threatens BCT and surrounding areas, stevedores and freight handlers must:

- Secure cargo.
- Store all loose tools, wires, bandings, or any other supplies in a secure area.
- Secure cargo handling equipment.
- The terminal will continue to operate as long as it is safe to do so. Freight handlers must be prepared to follow The Port Authority's cut off times for receiving and delivering cargo.

Once the storm has passed, stevedores and freight handlers are responsible for:

- Assessing damage to cargo and/or freight handling equipment and reporting the damages to the Terminal Manager.
- Cleaning up areas of responsibility.

YARD CRANE TIE DOWNS

Crane tie downs in C1

1J _____

1K _____

1L _____
___X_____
1N _____

1Q _____

1R _____
___X___X_____
1S _____

1V _____

1W _____
___X___X_____
1X _____

1Y _____

1Z _____X_____
___X___X_____

Crane tie downs in C2

2V _____

2W _____ X X _____

X X _____

2X _____

2Y _____

2Z _____ X X X _____

Crane tie downs in C3

3V _____

3W X X X X X X _____

3X _____

3Y _____

Crane tie downs in C4

4V _____

4W _____ X X X _____

X _____

4X _____

4Y _____

4Z _____

Crane tie downs in C5

5V X _____

5W X _____

5X _____

X _____

5Y X _____

5Z _____

Crane tie downs in C6

6V _____
_____ **X** _____

6W _____
_____ **X** _____

6FX _____
_____ **X** _____

6FY _____
_____ **X** _____