



Windstorm Checklist

The following may serve as a checklist when preparing for a hurricane, tornado or tropical storm. Although tornadoes usually provide little advance warning, locations subject to tornadoes may apply much of the following checklist prior to the Tornado season and after a strike. This checklist should be tailored to processes/ operations, wind protection features and windstorm potentials at your specific plant. The time required to complete each item should be determined in advance to allow proper planning.

Action to Take Before the Storm Season

Plant Management/Emergency Team:

1. Develop a Hurricane Emergency Response Team as part of the Plant Emergency Organization.
2. Review the hurricane portion of the Natural Hazard Property Loss Control Program and make any updates as required.
3. Prepare, or locate, and maintain a scaled plan or diagram of the facility which clearly shows the location of all fire protection and other emergency equipment.
4. Pre-qualify and pre-commit as many certified repair and service contractors as possible, including both local and national firms.
5. Obtain multiple suppliers for critical building components, equipment and stock necessary to resume operations/business.
6. Obtain the home telephone numbers of executives of all committed contracting firms, utilities and other services critical to resumption of operations.
7. Establish good credit with service providers, suppliers and contractors. Good credit and cash speak loudly in difficult times.
8. Establish and maintain good relationships with local police and fire departments.
9. Understand your energy needs and make arrangements for backup utilities and fuel sources where possible. Anticipate loss of electrical power and other utilities and consider emergency generators, alternative fuels, and the like. Have a list of fuel vendors in a different part of the state not likely to be affected by the windstorm or power outages. Local vendors may not have the trucks to transport fuel or electrical power to supply fuel to the transport trucks.
10. Identify alternative means of transportation and alternative routes for all critical personnel, services, suppliers, contractors, etc., and establish relationships with lease and rental companies.
11. Develop a phone directory for critical suppliers, contractors, services, etc. Obtain phone books from surrounding major cities in the event you need to obtain services and supplies from surrounding areas.
12. Plan for facility security after a storm.



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Buildings and Structures:

1. Review the structural integrity of each building and structure, including rotted wood, rusted metal, physical damage, loose/missing fasteners, etc. Replace or repair all damaged, missing or compromised components.
2. Review and evaluate the wind resistance of each structure and implement improvements to satisfy the applicable building codes and the Authorities Having Jurisdiction (AHJ's) for the location. There may be several AHJ's, including the insurance company.
3. Inspect roof coverings, perimeter flashings, gutters, drains, ventilators and other roof-mounted equipment.
4. Inspect exterior wall coverings for attachment, damage and weather tightness.
5. Check for weak door and window latches and hardware. Inspect shutters and dampers. Repair any broken windowpanes and frames.
6. Inspect sign, conveyor and stack supports, guy wires, cables, anchorages, and the like.
7. Identify and consider removing any large trees which may fall and damage the buildings or structures.

Fire Protection:

1. Ensure that all fire protection equipment is serviced and operational.
2. Fire water tanks should be inspected for structural integrity.
3. All outdoor exposed fire protection equipment should be adequately secured.

Emergency Equipment:

1. Have plywood available to secure vulnerable windows from flying debris.
2. Have tarps available to protect buildings and equipment from weather after the storm passes
3. Provide for emergency, temporary heating, steam and electrical supplies as needed. Equipment should be in good condition, serviced and approved for the application. Consider self-contained equipment that is not dependent on electricity or other fixed piping utilities.
4. Make arrangements for several forms of emergency communications including cellular phones, two-way radios, ham radio operators, etc.

Action to Take Once a Storm is Imminent (Hurricane Warning)

Plant Management/Emergency Team:

1. Assemble the Hurricane Emergency Response Team and supplies and equipment at a designated safe location on site. Consider the following:
 - a. Emergency lighting
 - b. Lumber and nails
 - c. Tape for windows, doors and other openings
 - d. Sandbags
 - e. Portable pumps and hoses
 - f. Emergency generators
 - g. Roofing paper
 - h. Caulking compound
 - i. Tarps and rope
 - j. Manual and power tools
 - k. Shovels, axes, etc.
 - l. Saws and chain saws
 - m. Emergency telephone list(s)



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2. Ensure that the Hurricane Emergency Response Teams have the following:
 - a. Nonperishable food
 - b. First aid equipment
 - c. Lighting
 - d. Two way communication equipment
 - e. Stored drinking water
 - f. Blankets
 - g. Appropriate clothing including rain gear
3. Establish emergency communication methods.
4. Designate a member of the Hurricane Emergency Response Team to monitor and report on weather conditions. The National Weather Service (NWS) and the National Hurricane Center are good sources of information: <http://www.nhc.noaa.gov/>
5. Board up windows, operate shutters, tie down equipment, etc. as needed.
6. When/if the decision is made, shut down operations and processes safely in accordance with OEM recommendations.
7. Release non-essential staff, or direct to a designated safe location.
8. Turn off non-essential lighting, machinery and equipment. Anticipate power outages and surges; be prepared to shut down susceptible systems such as computers.
9. Shut off all flammable and combustible liquid piping and gas lines at the source or entry into the property to reduce the likelihood of release if pipes are broken. When equipment or processes must be kept in operation, service to all other areas of the plant should be secured using isolation valving. Pipes should be properly supported and protected from wind and debris.
10. Back up important computer data and records and store backups in a safe location, preferably offsite.
11. Protect important paper records from wind, rain, flooding and debris.
12. When possible, move important equipment and stock if subject to potential wind, collapse, water or other weather exposure. If equipment or stock cannot be relocated consider additional protection with lumber, tarps, ropes, etc.
13. Consider flooding potentials:
 - a. De-energize equipment which may be submerged.
 - b. Move equipment and stock to higher locations, or protect with sandbags.
 - c. Verify operation of pumps and other dewatering equipment.
14. Secure electrical service and other utilities, eg. natural gas, when a building is in imminent danger of severe damage.
15. The Plant Emergency Organization should remain on site, if safe to do so, until the emergency has passed. Patrols should be made of the property looking for structural damage, fires, flooding, etc.



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Building and Structures:

1. Fill all aboveground tanks with product to improve stability and minimize damage from wind.
2. Anchor and tie down all structures, equipment, and storage in the yard including small buildings and sheds, trailers, conveyors, mobile equipment, lumber, process equipment, etc. Move smaller objects inside if possible. Ensure all traveling cranes and bridges are secured in accordance with the manufacturer's instructions including setting all rail clamps and securing with wedges and cable anchors. Secure all roof-mounted equipment.
3. Brace unsupported structural members and masonry walls for structures/buildings under construction.

Emergency Equipment:

1. Ensure emergency generators, water pumps, etc., are operational and fuel tanks are full.
2. Clean all catch basins, drains, and drainage ditches. Lower the levels of retention ponds. Ensure all sump pumps are operational and connected to emergency power.

Fire Protection:

1. Inspect all fire protection equipment and leave in service.
2. Ensure that electric driven fire pumps and fire alarms are not removed from service when any electricity is de-energized. When required, back-up diesel driven fire pumps should be considered for reliability.
3. Ensure all fuel tanks are full and all outside fire protection equipment is secured.
4. Verify all fire water tanks and reservoirs are full.

Recovery Action after the Storm

Plant Management/Emergency Team:

1. The Plant Emergency Organization Hurricane Emergency Response Team should be prepared and trained in recovery and salvage efforts specific for each location.
2. The site should be secured and a Command Center should be established to direct the recovery operation.
3. Damage should be surveyed and, as soon as possible, notification of fire protection impairments to the local fire department and/or police departments, as appropriate, should be appraised of impairments and damage as well. Report damage to insurance company as soon as possible.
4. Survey for safety hazards such as downed electrical wires, leaking gas or flammable liquids, poisonous gasses, damage to foundations or underground piping, etc. Use care around downed power lines and leaking fuel lines and consider providing barriers or watches. Notify the appropriate utilities as soon as possible.
5. Clean roof drains, storm drains, retention ponds, etc. and remove any debris.
6. Designated key personnel and emergency contractors should be called to coordinate and start repairs and salvage. Ensure that all contractors are familiar with Company Policy Programs and share responsibility for fire safe conditions at all times.



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7. Begin salvage as soon as possible to prevent further damage. Items to consider include:
 - a. Cover broken windows and damaged roofs.
 - b. Cover contents of buildings with tarps to minimize rain damage when roof repairs cannot be readily accomplished.
 - c. Separate damaged goods from undamaged goods
 - d. Make temporary repairs to prevent further damage.
 - e. Remove standing water in buildings, yard areas, etc.
 - f. Clean and dry equipment with most critical objects receiving priority.
 - g. Consider dehumidification of most areas, especially moisture sensitive equipment.
 - h. Inspect all electrical equipment including exposed insulators, bus bars, and conductors before reenergizing electrical distribution systems and equipment.

Fire Protection:

1. Repair and return to service as soon as possible all fire protection including sprinklers, water supplies, fire pumps, special extinguishing systems, alarms and supervisory service, etc.
2. Ensure that all Company Policy Programs, such as Hot Work (cutting and welding) and Smoking etc. are properly supervised and enforced during salvage and repair operations. If automatic protection is impaired, arrangements for special fire watches should be made and notice provided to insurance carrier and the fire department.
3. As flooding usually accompanies tropical storms and hurricanes, be sure to also review AIG's Flood Checklist.



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