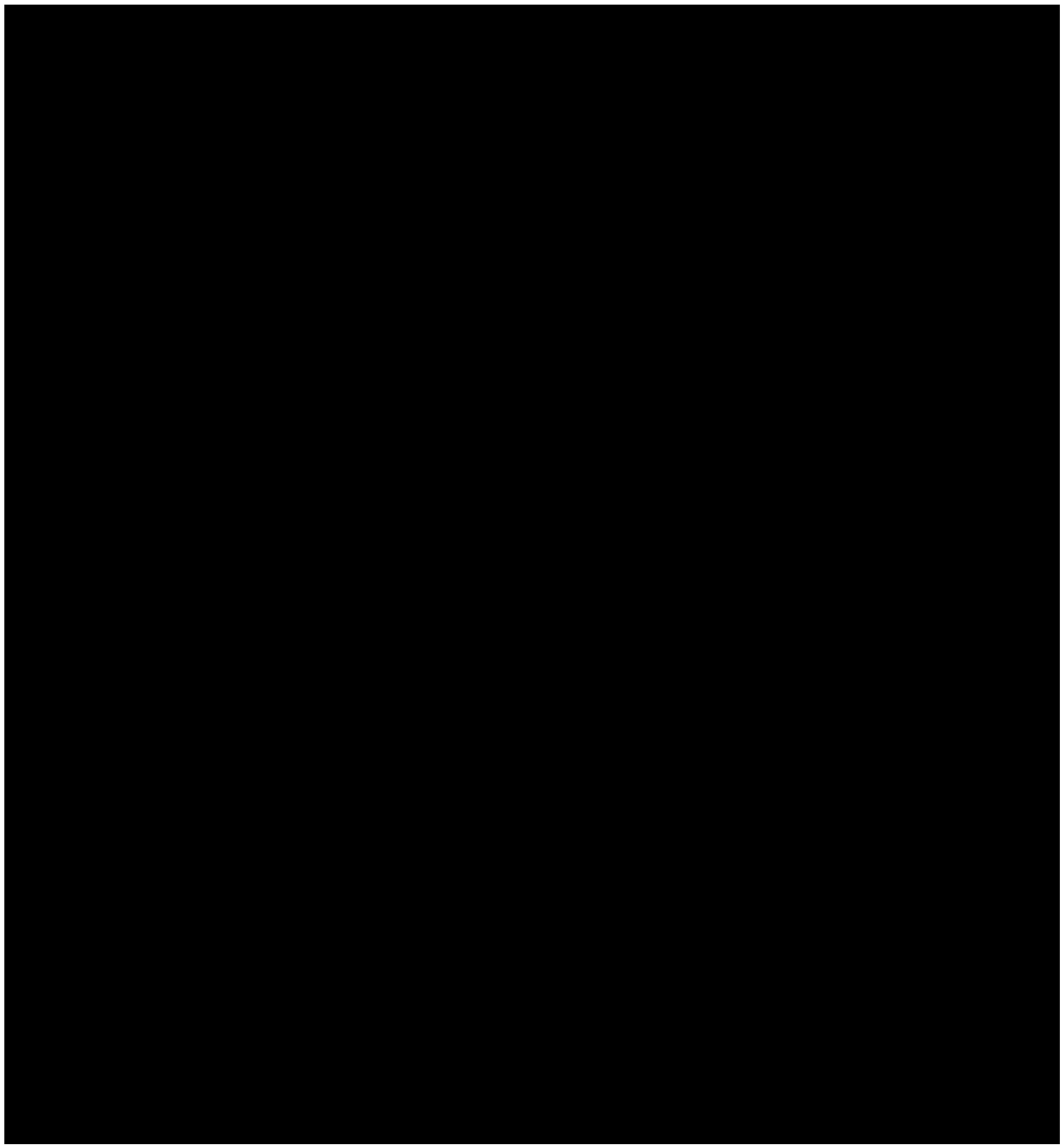

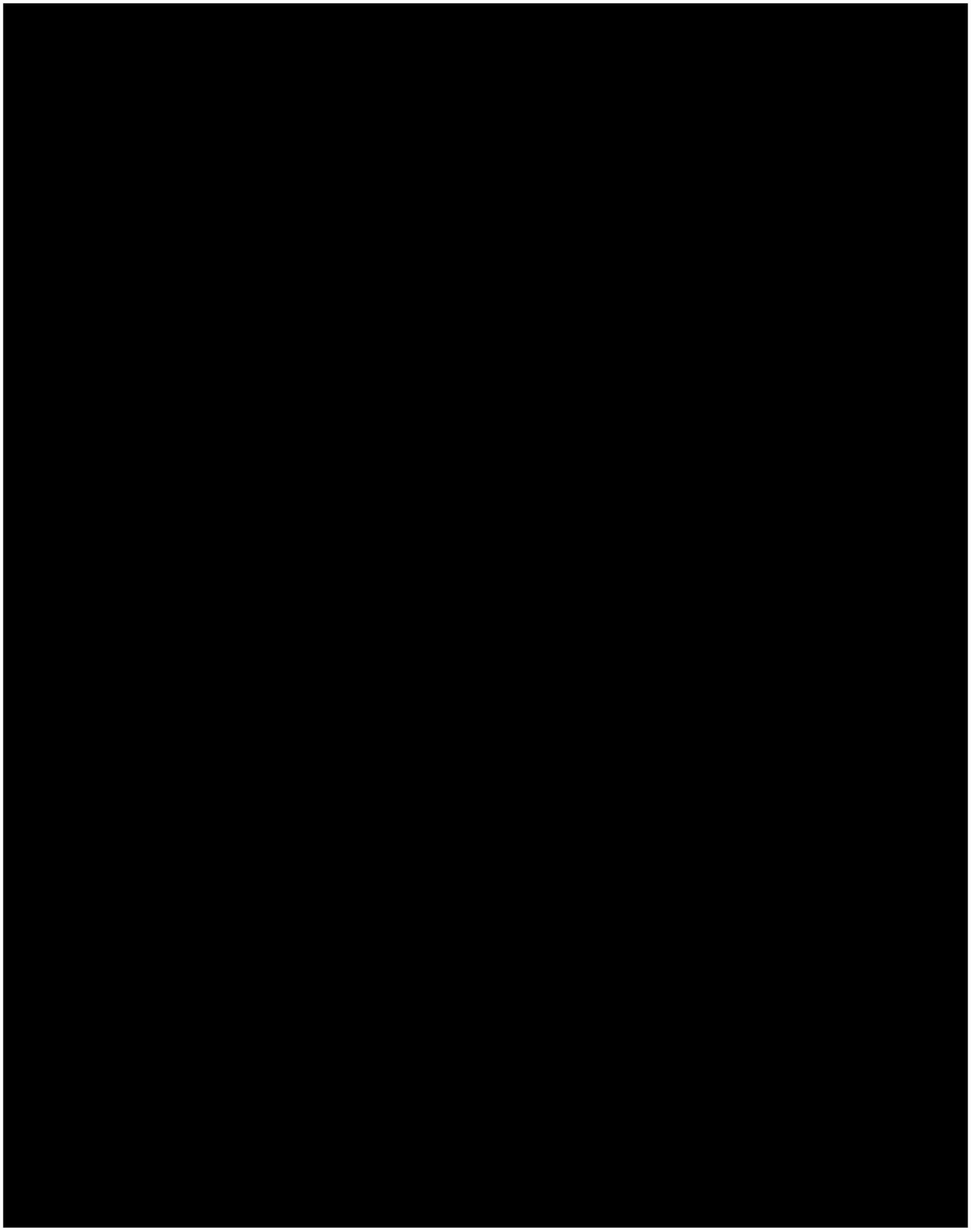

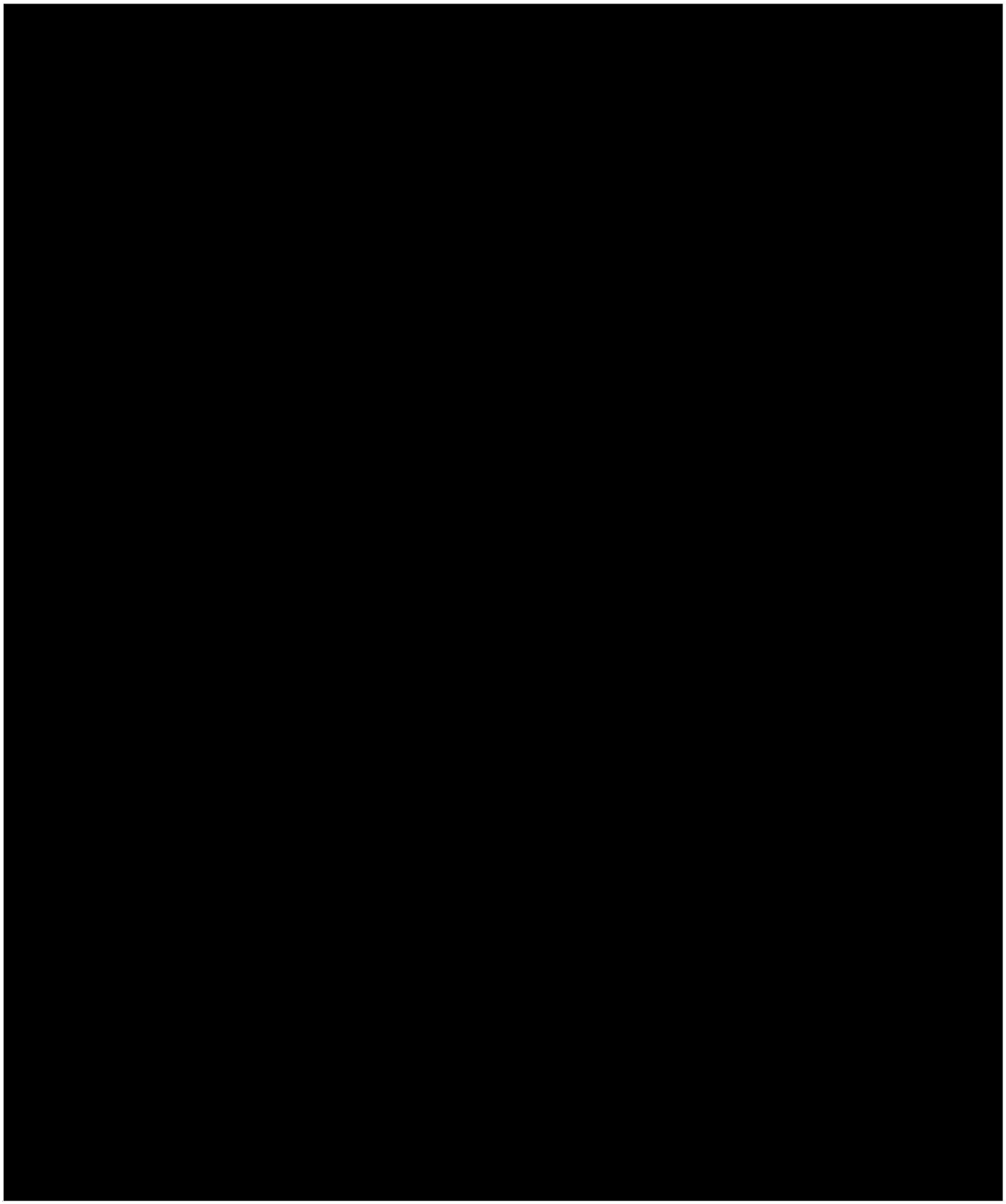

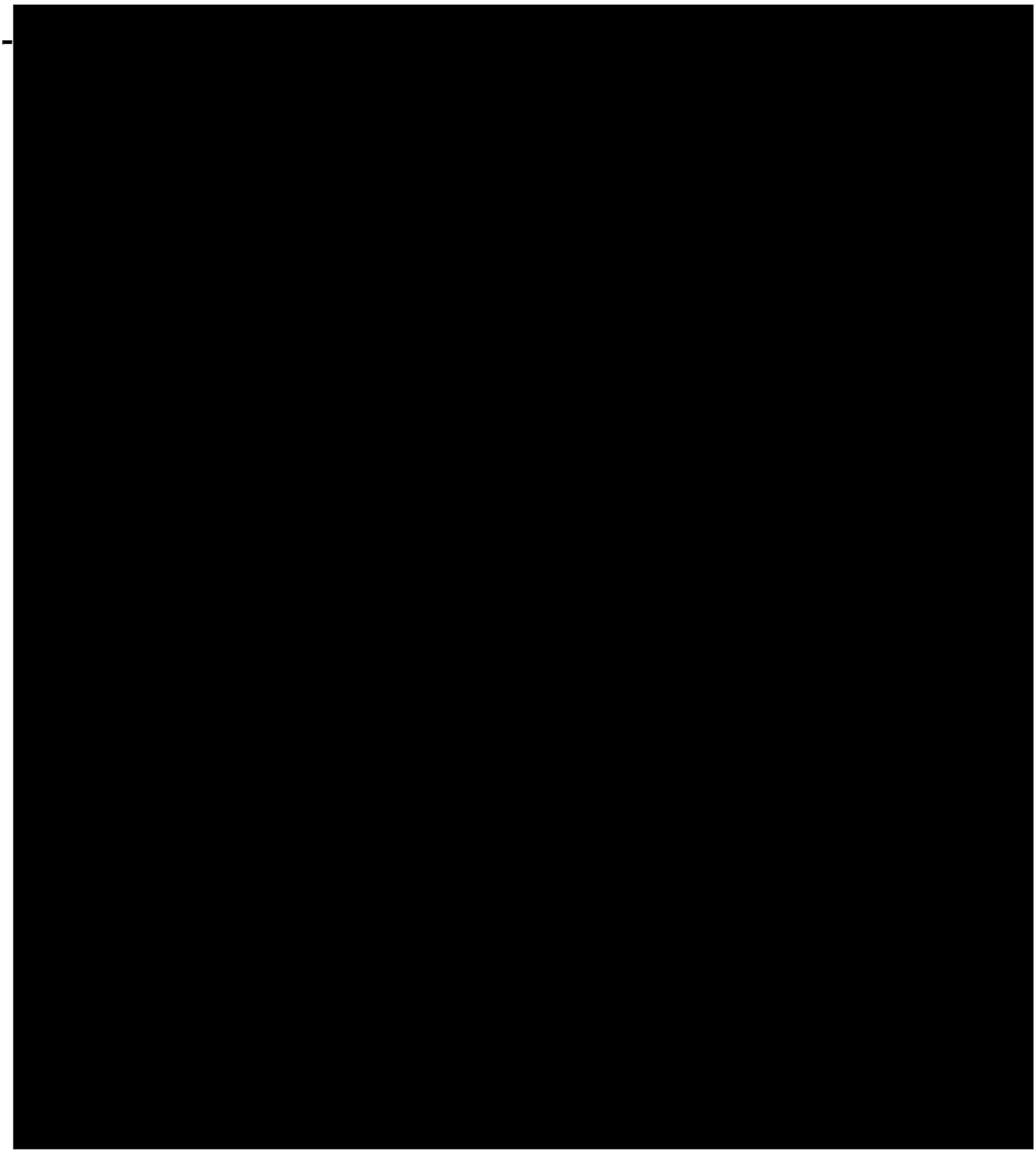

CALPINE

# PANDEMIC PLAN

## BUSINESS CONTINUITY

**Document Owner:** Danuel Olenius
**Revision schedule:** Annual and after activation

## Version History

| ID | CHANGE | DATE | AUTHOR |
|---|---|---|---|
| 1.0 | | 3/1/2011 | Roswitha Firth |
| 1.1 | Changed Roswitha Firth to Donna Hall | 9/28/2012 | Donna Hall |
| 1.2 | Owner name, conference phone number, activation of links | 9/03/2013 | Donna Hall |
| 1.3 | Name changes, passcodes, links, change from HR Director to HR, removed EBCMT | 9/17/2014 | Roswitha Firth |
| 1.4 | Updated MIR3 contacts, approvals, ownership | 2/8/2018 | Danuel Olenius |

[redacted]

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# Table of Contents

## Purpose and Scope

The purpose of this document is to ensure that Calpine management has the information necessary to make informed decisions regarding the safety of all Calpine employees and contractors before, during, and after a pandemic. It also outlines the steps to be taken to ensure the key business functions of the Company can be maintained if a pandemic affects any locale in which Calpine does business.

### *Audience*

This document provides information regarding plan activation and response for the following groups:

- Business Continuity Management Team (BCMT)
- Business Continuity Steering Committee (BCSC)

Awareness/education for employees and contractors is handled separately and can be found in General Pandemic Information.

### *Scope*

This document covers guidelines for Calpine's **response**, i.e.:

> "What we should be "doing when the emergency occurs." These are actions that we should be ready to take, and should take, beginning as soon as we are aware of the emergency conditions for which we have planned."[1]

- Decision-making requirements for the BCSC and BCMT
- Responsibilities of the BSCS and BCMT
- Steps to Return to Normal Operations (RTNO) specific to a pandemic

The pandemic plan is **not** intended to cover mitigation, prevention, and preparedness activities taken during early planning (such as making hand sanitizer available throughout the building) as these actions have been completed.

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[1] See National Incident Management System (NIMS) Response Phases



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## *Assumptions*

Based on information from the U.S. Center for Disease Control (CDC) and trends during past pandemics, Calpine makes the following assumptions and projections for pandemic planning:

- In a community, a pandemic "wave" will last approximately 6-8 weeks. At least two waves are likely to occur.
- Absenteeism of workers could be in the 30-40% range. Workers may be absent due to family care needs or fear of becoming infected. School closures will likely impact absenteeism as well.
- Suppliers and delivery systems may be affected due to absenteeism and travel restrictions. This could affect services such as garbage removal, mail delivery, utility repair, and fuel and food distribution.

## *Exclusions*

- It is important to note that this Pandemic Plan is a component of Calpine's Business Continuity Program.
- Business Continuity Plans for non-pandemic events are not discussed within this document.
- General BCP roles and responsibilities are defined in the Business Continuity Policy and are not repeated here.



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## Decision-Making Process/Activation

When the potential of a pandemic threatens the United States, the Calpine BC Manager and/or BCMT Chairperson will monitor the situation and communicate with both the BCMT and BCSC when applicable. The decision to activate Calpine's Pandemic Plan is based on several factors.

### *Factors*

#### World Health Organization (WHO) Phase

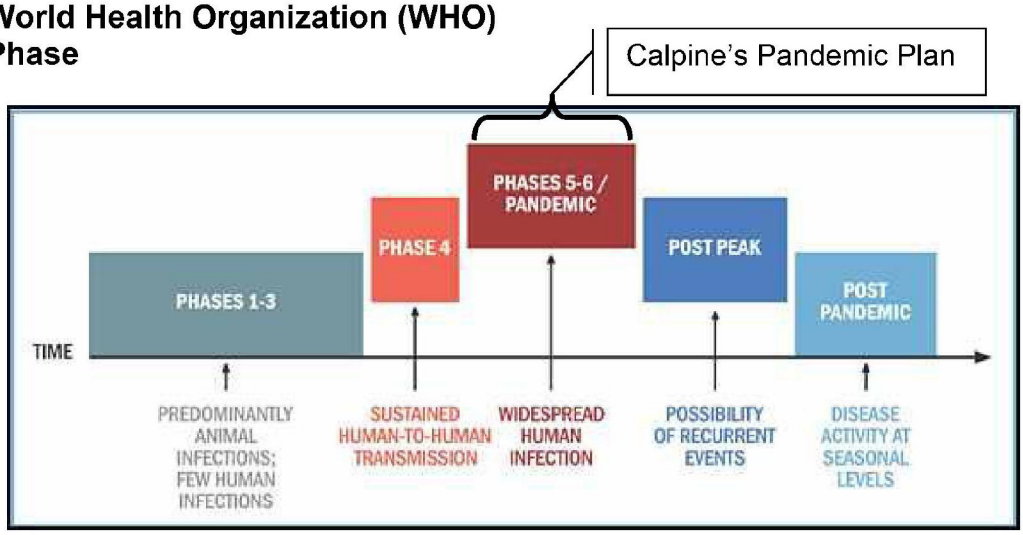


**Figure 1 WHO Pandemic Disease Timeline**

Unless the local situation warrants otherwise, Calpine's Pandemic Plan is not activated (at Standby) until the WHO declares Phase 5.

#### Local Disease Activity?

Calpine should activate its Pandemic Plan if it seems that a metro area (or region) in which Calpine has a facility is heavily affected by virus cases, but the WHO has not yet moved to Phase 5.

#### Is the virus highly contagious? Is it considered a virulent (severe) strain?

Calpine should take into consideration how the virus behaves in determining at what point to activate its Pandemic Plan. The WHO criteria do not consider severity of the virus, only the contagion (RO) level.



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## *Levels and Criteria*

Calpine has established two levels: **Standby** and **Emergency** to guide the BCMT and BCSC as well as WAVE responders and other employees.

➔ Based on WHO Phase 5 and considering localized information that may accelerate Calpine's response, the BCMT will recommend a Standby alert level.

ⓘ WHO Phase 5 indicates that the same identified virus has caused sustained community-level outbreaks in two or more countries in one WHO region.

➔ Based on WHO Phase 6 and again considering localized information that may accelerate Calpine's response, the BCMT will recommend an Emergency alert level.

ⓘ WHO Phase 6 is defined by Phase 5 plus the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.

Calpine BCMT should monitor resource information, keeping in mind that the disease may appear in many different parts of the nation almost simultaneously, or the disease may occur in only one or a few communities, and if not contained there, proceed to affect other communities.

If the status does not warrant activating the Pandemic Plan (either Standby or Emergency), Calpine should continue existing mitigation and prevention activities.

## *Plan Activation Procedures*

The BCMT Chairperson will convene the BCMT when the circumstances approach the Standby level. The responsibilities of the BCMT are to

➔ Discuss potential impact of situation on Calpine sites

➔ Recommend Standby level

The BCMT Chairperson then informs the BCSC (at minimum the BCSC Chairperson) of the recommendation. The responsibility of the BCSC (or at a minimum, one BCSC member if others are not available) is to

➔ Approve the plan activation (at Standby level)

The BCMT Chairperson (or Incident Commander) notifies all impacted sites, departments, and functional areas of the activation.

The same process should be followed to change the level from Standby to Emergency.



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### *Ongoing Assessment*

After the initial alert level is announced, members of the BCMT will meet at least weekly to reassess the current situation (to be known as the BC Assessment Meetings). The BCMT Chairperson is responsible for updating the BCSC as necessary. During an Emergency alert, the BC Assessment Meetings will occur daily and include the BCSC. During each meeting, Management will decide whether to increase, continue with, or decrease the current emergency level.



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# Communication

## *Content and Approvals*

All emergency notification messages will be drafted by Corporate Communications. Once drafted, the communication messages must be approved in accordance with Corporate Communications policy.

## *Notifying Employees*

Once an alert level is determined, an emergency communication message alerting employees of the situation should be relayed.

The emergency notification message sent should match the current emergency level announced (Standby or Emergency). Corporate Communications will customize standard email and voicemail emergency notification messages (per level) for a pandemic.

### Frequency

Any changes to the alert level require a standard notification message to be sent no longer than two hours after each meeting. If no changes result from the BC Assessment Meeting, no notification message is required, but may still be sent if deemed necessary.

### Method

➔ For Standby alerts, the message will be sent by Calpine voicemail and/or email

➔ For Emergency alerts, messages will be sent using the Emergency Notification System (MIR3) in addition to Calpine voicemail/email

➔ For all messages, Calpine's employee hotline should supplement the above

- [redacted]

The following individuals have access to MIR3 and can process notification requests for Corporate Communications:

| NAME | WORK PHONE | MOBILE | EMAIL |
|---|---|---|---|
| Danuel Olenius | [redacted] | | |
| Sherri Green | | | |

*Contact should be attempted in the order listed.*



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The BCMT, Corporate Communications, and Legal should allow adequate time to draft and approve communication messages to meet the two-hour deadline for an alert level change or to send other messages within a reasonable timeframe.

## *Management Communications*

All BC Assessment-related meetings will utilize Calpine's conference bridge provider using the dial-in information that will be provided at that time.

BC Assessment meetings are to be concise and focus on the facts surrounding the current Pandemic situation. A suggested agenda is included at the end of the plan.

Detailed scheduling of the bridges will be determined by HR (as the plan owner) once the plan is activated.



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# Responsibilities and Tasks

## *Standby Actions*

| TYPE | SUMMARY | WHO | HOW | WHEN |
|---|---|---|---|---|
| Surveillance | Plan for Emergency level | HR | Management polling to track absenteeism | Weekly |
| | Monitor disease progression | BCMT Chairperson, BC Manager | Monitor health and public safety resources for latest statistics and communicate to BCMT | Weekly |
| Infection Control | Develop and implement policies for sending ill staff home | HR | Review procedures for sick leave, time off, pay, etc. | As soon as plan is activated |
| | Minimize opportunities to contract disease | HR, BCMT | Finalize policies for increased cleaning schedule, mail handling, isolation, quarantine, etc. | In advance of Emergency activation |
| | | Facilities, Plant Management | Obtain funding for educational posters, personal protection equipment (N95 masks, gloves, etc.) and distribute | When required |
| Continuity of Operations | Prepare for reduced staffing and social distancing | BCMT | Cross-train, verify remote capabilities, consider alumni, contractors, etc. for core operations | As soon as plan is activated |
| Communication | Notify employees of plan activation | Corporate Communications | Email/voicemail, hotline | Within 2 hours of activation |
| | Plan for Emergency level | | Prepare and obtain approval of messages | In advance of Emergency activation |
| | Increase awareness | | Activate pandemic awareness links on OneCalpine, utilize Corporate Communications emails for employee education | When required |

**Social distancing can be achieved by 1) minimizing face-to-face contact – using conferencing technologies instead, 2) tele-commuting – using VPN technology to reduce the number of employees at the office, and 3) spreading out the workforce by using additional facilities, such as space vacated by employees working from home, conference rooms, and CyrusOne**



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## *Emergency Actions*

| TYPE | SUMMARY | WHO | HOW | WHEN |
|---|---|---|---|---|
| Surveillance | Monitor absenteeism | HR | Management polling to track absenteeism | Daily |
| | | BC Manager; Corporate Communications | Utilize MIR3 to poll employees on health status and provide stats to HR | Weekly or when required |
| | Monitor disease progression | BCMT Chairperson, BC Manager | Monitor health and public safety resources for latest statistics and communicate to BCMT | Weekly |
| Infection Control | Minimize opportunities to contract disease | HR, BCMT (Managers to communicate to staff) | Implement social distancing, mandatory work from home, and travel restrictions as indicated for affected sites | When required |
| | | HR, Facilities | Implement procedures for sick leave, time off, pay, increased cleaning schedule, mail handling, isolation, quarantine, etc. | When required |
| | | | Consider screening stations | When required |
| | | HR, BCMT | Initiate voluntary quarantine of healthy staff members. **Ensure advance notice of possibility.** | When required |
| Continuity of Operations | Activate all available staffing options | BCMT | Utilize planned resources (contractors, alumni), shift cross-trained employees to critical business functions | When required |
| | Suspend non-critical functions | HR, BCMT | Discontinue training, non-essential meetings, etc. as appropriate. Restrict/eliminate visitors and limit maintenance activities when possible | When required |
| | Deploy additional technologies to support increase in remote | IS, BCMT | Increase conference bridge access, implement video conferencing, increase VPN capabilities, issue | When required |



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| TYPE | SUMMARY | WHO | HOW | WHEN |
|---|---|---|---|---|
| | workforce demands | | laptops so that employees can work from home | |
| | Increase vendor communications | BCMT | Managers/Supervisors to contact critical vendors and communicate requirements | When required |
| Communications | Notify employees of Emergency Level | Corporate Communications | MIR3 in addition to Email/voicemail, hotline | Within 2 hours of Emergency activation |
| | Increase awareness | | Email/voicemail, hotline updates | When required |
| | | | Communicate Employee Assistance Program (EAP) options (e.g. grief counseling) | When required |
| | Coordinate with external agencies | As determined by the BCMT | Maintain contact with Mayor's Office, Harris County Office of Emergency Management, etc. | As soon as plan is activated |
| | Communicate any government-enacted restrictions | BCMT Chairperson, Corporate Communications | MIR3 in addition to Email/voicemail, hotline | As soon as possible |



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## Recovery (Return to Normal) Actions

Once the pandemic is at post-peak activity in an affected area, it will be appropriate to consider scaling back from the Emergency level of the plan to Standby. It is **not** recommended to deactivate the plan directly from the Emergency level as many of the standby actions will still be appropriate, e.g. continued monitoring for the possibility of recurrence.

Once disease levels approach seasonal norms in the affected area, it will be appropriate to deactivate the plan.

In both cases, communication procedures as set forth in this document shall be followed.



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# Appendices

## *Resources*

### WHO Website

http://www.who.int/csr/don/en/index.html

**Figure 2 WHO**

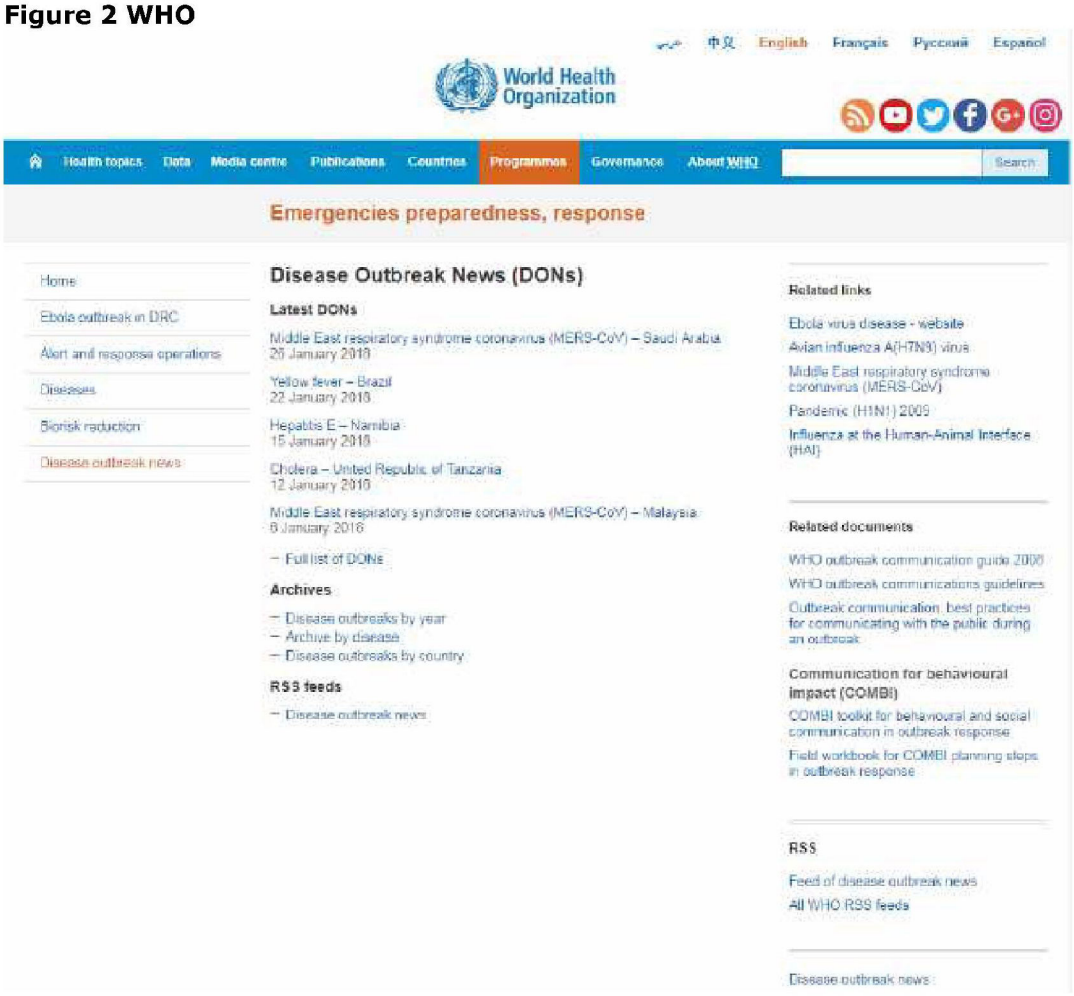


**Figure 3 WHO**

### DHHS Website

Information published by the US Department of Health and Human Services (DHHS). The US DHHS is the lead governmental agency for the planning and response to a pandemic. http://pandemicflu.gov



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## CDC Website

The Centers for Disease Control and Prevention (CDC) has primary responsibility for tracking a pandemic and managing the operational aspects of the public health response. http://www.cdc.gov/flu/weekly

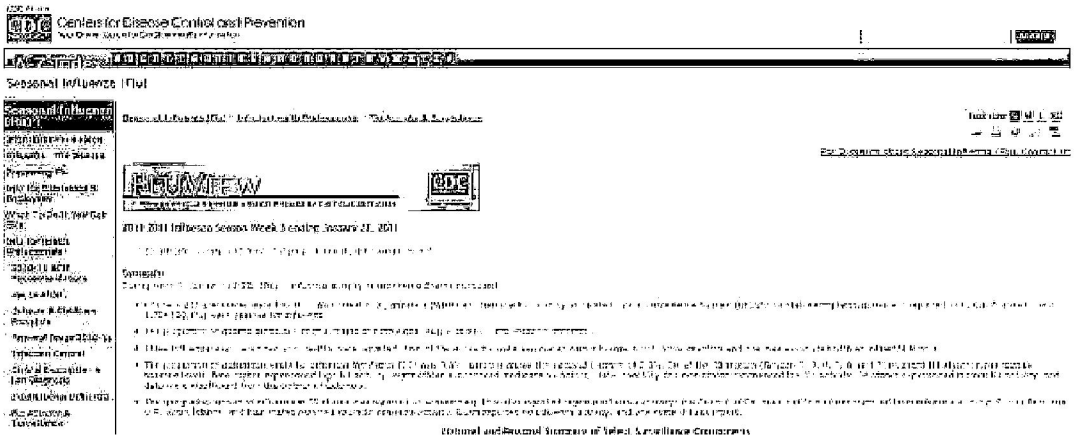


**Figure 4 CDC**

## *Response Phases*

| NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS) | | |
|---|---|---|
| Mitigation / Prevention | What we should be "doing always" | Things that we can and should be doing to minimize the likelihood of the targeted hazard or condition from becoming an emergency. |
| Preparedness | What we should be "doing now" | Things that we can and should be doing to be prepared in case of the emergency condition coming into being. These are actions for which there is not likely to be adequate time or resources to complete after the emergency situation begins to occur. |
| Response | What we should be "doing when the emergency occurs" | Actions that we should be ready to take, and should take, beginning as soon as we are aware of the emergency conditions for which we have planned. |
| Recovery | What we should be "doing after the emergency conditions pass" | Actions that we should be ready to take, and should take, when the emergency "response" period is over. In the case of a pandemic, this does not necessarily mean that there will not be further cases, but the high incidence and continuing spread will have subsided. |

**Figure 5 Four Phases of NIMS Emergency Response**



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## *BC Assessment Meeting Agenda*

This recommended agenda may be modified as needed. Note that not all agenda items will necessarily apply (e.g. CyrusOne may not be in use).

| | WHO | COMMENT |
|---|---|---|
| Roll Call | HR | |
| Administrative Update | HR | |
| Key Decisions | BCMT Chairperson | |
| Status Reports | BCMT | |
| Government Health Reports | HR | |
| Business Operations (all sites) | Commercial Operations, BCMT | |
| Power Operations | Regional Operations | |
| Houston and other office Accessibility Conditions | Facilities, HR | |
| Communications (ENS statistics and conclusions), other communications updates | BC Manager, Corporate Communications | |
| CyrusOne Operations | IS, BC Manager | |
| Actions/Owners | BCMT Chairperson | |
| Alert Level Update | BCMT Chairperson | |
| BCSC Update | BCMT Chairperson | |
| Closing | HR | |
| Next Communication Date | HR | |



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## Approvals

| NAME | ROLES | RACI | APPROVAL |
|---|---|---|---|
| Hether Benjamin-Brown | BCMT Chairperson | Accountable | |
| Danuel Olenius | BC Program Manager | Accountable / Responsible | |
| | | Responsible | |



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# Annex 5 – Hurricane Annex

## PGC Plant Specific Hurricane Plans

## Corporate/REPs Hurricane Plan

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**Appendix 6 Hurricane Recovery Checklist**

# 1. HURRICANE POLICY

It is the intention of management to maintain the Operations of the plant until such time that the safety of plant personnel and equipment is threatened or until the plant is unable to export power due to transmission line problems.

Should it become necessary to shut the plant down and evacuate the area, a minimum number of volunteers from the plant Operations and Maintenance staff will be asked to remain at the plant site. The crew remaining after the shutdown will monitor the storm and maintain the facility as well as possible, maintain communications and management updates, and facilitate the damage assessment and recovery efforts after the hurricane threat has passed.

Final decisions as to what steps will be taken, and when they occur, will be made by the Plant Manager, with approval and close coordination with the RVP.

# 2. PURPOSE

This Emergency Hurricane Procedure Manual has been developed to assure that the BEC Plant and its employees are prepared in the event of a tropical storm or hurricanes should threaten to strike the facility.

This procedure provides information and outlines steps to protect personnel and equipment against the possible destruction of a hurricane, and is a guideline to follow rather than a set of rigid rules. The severity, speed and expected area of landfall will determine the time that these steps will be taken. The Baytown Energy Center relies on the National Weather Service broadcasts for the latest changing weather conditions and the probability values for possible landfall of a tropical storm or hurricane.

For better preparedness and smooth transitions in case of the threat of a tropical storm or hurricane this procedures manual has been divided into five phases of readiness. These five phases have been developed in conjunction with the storm threat and COVESTRO hurricane procedures. The five phases and their definitions are listed below.

**PHASE I 1,000 Miles or 100 Hours Alert> TROPICAL STORM/HURRICANE ALERT**

- A tropical storm/hurricane has formed and is threatening to enter or has entered the Gulf of Mexico but is not an immediate threat.

**PHASE II 720 Miles or 72 Hour Alert>TROPICAL STORM/HURRICANE WATCH**

- A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to the immediate area within the next 72 hours.

**PHASE III 48 Hour Alert>TROPICAL STORM/HURRICANE WARNING**

- A tropical storm/hurricane is predicted to make landfall in the immediate area within a 48-hour period.
- Put the Storm Crew on 12-hour notice.

**PHASE IV 350 Mile or 36 Hour Alert>HURRICANE DUTY**

- A tropical storm/hurricane will make landfall within the next 36 hours.
- Set the Storm Crew watch.
- Store personal vehicles of Storm Crew in the warehouse.

**PHASE V POST HURRICANE**

- That time following the hurricane until the plant manager sounds the all clear.

□

# 3. Hurricane Preparedness

**Complete items in this section prior to June 1 and document in Maximo.

All personnel begin closely monitoring local weather forecasts and N.O.A.A. weather broadcasts for early signs of Tropical Storm warnings.

All personnel will review the Hurricane Procedures Manual, which will be formally reviewed in the May Safety Meeting of every year. Document completion of review by using the training muster sheet.

The Plant manager will call a management meeting to discuss the plant and personnel weather emergency readiness.

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The Business Manager will coordinate with the Baytown-Chambers County Local Emergency Planning Committee (LEPC) to determine the necessary steps and approvals that need to be taken to allow Calpine Baytown employees or contractors access to the plant site after the hurricane makes landfall.

All personnel will begin early preparations that include, plant wide housekeeping, proper stowage, and inventory. This also includes readiness at home...

All personnel shall verify personal and emergency contact information in Caliber. Document completion of verification by using the training muster sheet.

The Business Manager will contact the Calpine Corp. home office. Plans should be made for the transfer of files should this become necessary.

Plant Management will survey the plant for equipment and/or items not deemed necessary, and should make arrangements to have this equipment removed from site.

Business Manager will confirm the telephone and emergency telephone numbers of employees and vendors, which will be included in this manual.

The Warehouse Technician will perform an inventory of the hurricane season emergency supplies and re-stock as necessary. Document completion by completing the Hurricane and Supply Closet inventory list in Section 12.

On May 1, the Operations Manager will solicit storm crew volunteers via email and will update the list (Appendix 1) no later than June 1.

Additional fuel tanks should be rented and stored onsite in preparation for fuel shortages should a hurricane impact the site. Arrangements should be made with the fuel supplier for priority resupply as part of the tank rental.

# 4. PHASE I

## TROPICAL STORM/HURRICANE ALERT:

A tropical storm/hurricane has formed and is threatening or has entered the Gulf of Mexico but is not an immediate threat to our area.

**Management will meet and discuss the following:**

- Storm location and direction of travel.
- Areas of responsibility: Management, Operation team members.
- Plant readiness and implementation of Phase I action.
- Formally implement Phase I.

**When Phase I has been formally implemented the following steps should be taken:** Post and announce all weather bulletins issued by N.O.A.A. at appropriate locations. (control room operator with the assistance of the Operations department)

All employees and contract employees should start making family plans and preparations at home at least 36 hours before storm makes landfall.

The following in-plant preparations should be implemented:

# 5. PHASE II

## TROPICAL STORM/HURRICANE WATCH:

A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to our area.

**Management will meet and discuss the following:**

- Storm location and predictions.
- ETA of storm should it be determined that it is headed in our direction.
- Estimated time that a plant evacuation should be ordered as it becomes necessary. □ Areas of responsibility: Management and Operations team members
- Plant readiness and the formal implementation of Phase II action.

**When phase II has formally been implemented the following steps should be taken:**

- The Operations Manager will have supplies stocked for hurricane duty personnel.
- Off duty employees will be notified by the supervisor to alert them of the operating status of the plant. Supervisors will request information concerning the availability of these people should they be needed.
- The Operations manager will contact CES and determine the status of gas availability.
- The Storm Crew will be put on 24-hour alert status.
- The Control Room Operator will continue to monitor the progression of the storm and will continually update the Plant Manager and staff.
- The COVESTRO emergency broadcast radio will be closely monitored for their plant status changes that will determine steam and power demands.
- The control room operator will update the plant manager for any changes in status of COVESTRO, CES and Reliant.
- The control room operator will keep a thorough log of all broadcasts and happenings as they occur for study at a later date.

# 6. PHASE III

## TROPICAL STORM/HURRICANE WARNING:

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A tropical storm/hurricane is predicted to make landfall in the immediate area within a 48-hour period. Hurricane force winds are imminent.

**Management will meet and discuss the following:**

- Storm location and predictions. This includes storm size category and possible storm surge.
- ETA of storm.
- Employee family readiness.
- Plant readiness, COVESTRO readiness, CES communications, Evacuation time, Implementation of the Storm Crew, Local authorities' emergency information and Possibility of plant shutdown.
- Formal implementation of PHASE III.

**When PHASE III has been formally implemented by the direct consent of the Plant manager or his/her designee, the following plan should be implemented:**

- Move mobile equipment to safe area to be tied down as it becomes necessary.
- Remove all loose items throughout the plant and store. i.e. air hoses, fire extinguishers, ladders and any other items that may be blown away due to hurricane force winds.
- Check all portable buildings for tie-downs tighten or tie down as necessary.
- Remove all unnecessary contracted equipment from plant.
- Operations department will begin procedures to top off all tanks.
- The Operations Manager will contact COVESTRO and determine their intentions. In addition, he will advise them that any change in their operation status must be communicated through our control room operator.
- The control room operator will keep good communications with COVESTRO and CES and keep them posted from this point on any change in our Operations as becomes necessary
- The Operations Manager will make contact with vendors whose services may be needed after storm has passed and inform them we may need their services within 24 hours of a storms passing.
- The Operations Manager will have supplies stocked for Storm Crew personnel.
- Off duty employees will be notified by the supervisor to alert them of the operating status of the plant. Supervisors will request information concerning the availability of these people should they be needed.
- The Operations manager will contact CES and determine the status of gas availability. The Hurricane Emergency Crew will be put on 24-hour alert status.
- The Control Room Operator will continue to monitor the progression of the storm and will continually update the Plant Manager and staff.
- The COVESTRO emergency broadcast radio will be closely monitored for their plant status changes that will determine steam and power demands.
- The control room operator will update the plant manager for any changes in status of COVESTRO, CES and Centerpoint.

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- The control room operator will keep a thorough log of all broadcasts and happenings as they occur for study at a later date.
- The Operations Manager will notify the Storm Crew to make final preparations at home and for their families, to report back to work not later than 12 hours from the time they were put on notice. In the event a member of the Storm Crew is at work when Phase III is implemented all efforts will be made to allow the individual to leave in order to make personal preparations.
- Maintenance personnel will board up the Administration Building windows.
- The Operations Manager will contact the COVESTRO emergency department and provide them with a list of the employees that will remain in the plant.
- The Operations Manager will contact COVESTRO. Information concerning steam and power demands will be received. The availability of water supply and the duration of this supply will be determined.
- The Operations Manager will contact CES and inform them of Operations plans and gas needs. Emergency numbers will be exchanged.
- The operations group will verify that back-up supplies are lined up and operational.
- The Operations Manager will verify and/or fill all company vehicles with fuel.
- The operations group will develop a final list of all plant personnel containing employee evacuation plans and emergency telephone numbers where they may be reached.
- The operations group will check the status of radios and batteries.

The Storm Crew will report to work after ensuring the safety of their homes and families. Upon returning to the plant site, the Storm Crew will do the following:

- Report to the control room and log in.
- Make a plant walk through.
- Meet with the plant management and be briefed on plans, and strength of storm for possible plant shutdown and evacuation.
- Relieve the Operations duty and Maintenance duty personnel.
- Monitor the NOAA weather radio broadcast for an immediate update of storm conditions and predictions. Continue to monitor weather updates throughout the storm.
- The Plant Manager or his/her designee will order the evacuation of all non-essential personnel from the premises no later than 36 hours before landfall.

# 7. PHASE IV

**HURRICANE DUTY:**

A TROPICAL STORM/ HURRICANE WILL MAKE LANDFALL IN OUR IMMEDIATE AREA WITHIN THE NEXT 36 HOURS.

**NOTE: IF HURRICANE FORCE WINDS ARE EXPECTED IN EXCESS OF 100 MILES PER HOUR, IT IS THE POLICY OF BAYTOWN ENERGY CENTER TO BEGIN A CONTROLLED PLANT SHUTDOWN. STARTING WITHIN 12 HOURS OF THE STORMS PREVAILING WINDS REACHING OUR AREA. REFER TO THE EMERGENCY PLANT SHUTDOWN PROCEDURE IN THIS MANUAL.**

**At 36 hours from landfall, the Storm Crew will assume the responsibilities of the plant. The Operations Manager will order the evacuation of all personnel not on the Storm Crew. The following task should be completed at this time:**

- The Operator Tech III will make a walk-through of the plant to ensure its readiness for storm conditions.
- The Operator Tech III will inventory the supplies to insure an ample supply of food, water and other necessities necessary for his crew and make the necessary adjustments.
- The Operator Tech III will do everything within his power to insure the safety of his crew.
- In the event winds in excess of 100 mph. are expected, the Operator Tech III will follow the plant shutdown procedures.
- The Operator Tech III will maintain his crew inside the control room and not allow any venturing outside during the high winds.
- No one person shall venture out into the plant alone, tag teams of two may go out in an emergency with the following equipment; Hard hats with chin straps, safety harness with bung cords of no more than 10 feet in length, rubber boots and gloves, safety glasses with side shields, foul weather gear.
- In the event winds in excess of 120 mph. are expected, upon the safe shutdown of the plant, the Operations Manager will implement plans for the safe evacuation of his crew to a safe building at the COVESTRO facility
- If evacuation becomes necessary, the supervisor will notify COVESTRO of his plans for evacuation.

**NOTE: CALM CAN BE DECEIVING. DO NOT TRUST THIS CALM WITH YOUR LIFE OR YOU MAY FIND YOURSELF TRAPPED IN THE MIDDLE OF A HURRICANE.**

# 8. PHASE V

## POST HURRICANE:

TIME FOLLOWING THE PASSAGE OF A HURRICANE and THE PLANT MANAGER ISSUES THE ALL CLEAR.

**Following the passage of the hurricane and the subsidence of possible floodwaters, the following task should be completed:**

- As the storm passage allows, the emergency crew members will tour the plant in order to assess the damage incurred. Pictures should be taken of damage.
- As soon as possible, each employee should contact the plant. A contact number should be given to the supervisor. The employee should inform the supervisor as to their availability to report to work. (Management realizes that areas may be flooded and telephone lines may be down for some time.)

### CAUTIONS & SAFETY

**Following the passage of a hurricane, all individuals that are on the job site or entering the job site must take extreme caution. Some of these cautions are as follows:**

- Due to the possibility of water action and undermining, care must be taken when driving or walking in the plant.
- There could be a possibility of electrical shock due to flooding of cable pits, motor starters and switches. Extreme care must be taken when working near this equipment.
- Pollution of drinking water due to high tides could be possible. Until the city has given the all clear to the potable water system, bottled water only should be consumed.
- There may be items of debris blown partially free or hanging precariously. Broken glass will pose a problem on the ground. Special care must be taken when walking under equipment.

## 9. DUTIES AND RESPONSIBILITIES

**Responsibilities during a hurricane emergency will follow normal operating routine. Special responsibilities are listed below.**

**Employees:**

- Report to work as scheduled until such a time that weather conditions make it impractical, management, or local law enforcement otherwise advises you.
- After a storm: All employees who have evacuated the area should remain outside of storm-damaged area until the all clear by the local law enforcement agencies is given. In some cases, it may be necessary to show proof that you live or work in the area to get past roadblocks that may be set up.
- Volunteers for the Storm Crew should have all of their personal and family interests safely secured within 36 hours of a storms threatening landfall.
- Stay in touch with management for scheduling changes.

**Plant Management:**

- Meet and discuss objectives/options.
- Direct all plant activities.
- Initiate all phases of hurricane plan as necessary.
- Release all non-essential personnel when/if appropriate.

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# 10. EMERGENCY SHUTDOWN PROCEDURE

This shutdown procedure is designed to give BEC maximum time allowable for safe shutdown and evacuation if necessary and still give enough flexibility in our plan, to stay on line in case of change of direction or force of the incoming hurricane. In the event the maximum sustained winds are predicted to be greater than 100 miles per hour, and the hurricane's course is predicted within a 50-mile radius of Baytown the following steps will be taken. It is important to monitor the NOAA weather radio broadcasts for updates during and after each step is taken in case of change.

**Note: The Plant Manager or his designee with close coordination with the RVP will authorize the plant to be shutdown.**

# 11. HURRICANE AWARENESS INFORMATION

If you live or work in the Houston/Galveston area, you must be alert and prepared for the destructive force of a hurricane or tropical storm. The question in this area is not if a hurricane will hit; but when will a hurricane hit?

The National Oceanic and Atmospheric Administration defines hurricane as a tropical cyclone, in which winds reach constant speeds of 74 miles per hour or more, and blow in a large spiral around a relatively calm center, or the eye of the hurricane. Simply stated hurricanes are giant whirlwinds in which air moves in a large tightening spiral around a center of extreme low pressure, reaching maximum velocity in a circular band extending outwards 20 to 30 miles out from the rim of the eye. This circulation is counterclockwise in the northern hemisphere and clockwise in the southern hemisphere. Near the center, hurricane winds may gust to more than 200 miles per hour.

Because of the unpredictability and extreme danger of these storms, the Saffir/Simpson Hurricane scale (SSHS) was developed to give an estimate of the potential property damage and flooding that can be expected along the coast from a hurricane. This scale, ranging from one to five is based on the hurricane's present intensity.

**SAFFIR/SIMPSON HURRICANE SCALE CLASS:**

- Winds 74-95 mph or storm surge 4-5 feet above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.
- Winds 96-110 mph or storm surge 6-8 feet above normal. Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.

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- Winds 111-130 mph or storm surge 9-12 feet above normal. Some structural damage to small residences and utility buildings with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet may be flooded inland 8 miles or more.

- Winds 131-155 mph or storm surge 13-18 feet above normal. More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet above sea level may be flooded inland as far as 6 miles.

- Winds 155 mph or storm surge greater than 18 feet above normal. Complete roof failure on many residences and industrial buildings. Some complete building failure with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet above sea level and within 500 yards of the shoreline. Massive evacuation for residential areas on low ground within 5-10 miles of shoreline may be required.

## HURRICANE TERMINOLOGY

**TROPICAL DEPRESSION:** An area of disturbed weather in the tropics that has the potential of storm development.

**TROPICAL STORM:** A closed low-pressure circulation at the surface in the tropics with winds 39 to 73 MPH.

**HURRICANE:** A closed low-pressure circulation in the tropics with winds in excess of 74 MPH.

**SMALL CRAFT ADVISORY:** When issued in conjunction with possible hurricane conditions for this area, advises small craft operators to take precautions and not to venture into the open Gulf.

**GALE WARNINGS:** When winds of 38-55 MPH are expected.

**STORM WARNING:** When winds of 55-74 MPH are expected. Normally, not used in the Gulf or this area; usually Hurricane warnings follow gale warnings.

**HURRICANE WATCH:** Hurricane may threaten this area within 24 to 36 hours.

**HURRICANE WARNING:** Hurricane force winds or high tides and seas expected to strike this area within 24 hours.

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# APPENDIX 1: HURRICANE SUPPLIES LIST

**This list of items should be maintained in the warehouse during Hurricane Season**

| AMOUNT | ITEM | Initial | Date |
|---|---|---|---|
| 6 | 10' X 20' Heavy Duty Tarps | | |
| 1 | Roll of 1/2" rope | | |
| 1 | Roll of 1/4" rope | | |
| 6 | Rolls of duct tape | | |
| 6 | Rolls of barricade tape | | |
| 1 | Skewer of #9 wire | | |
| 2 | Safety gas cans 5 gal | | |
| 2 | Safety diesel cans 5 gal. | | |
| 1 | Portable Eletrical generator | | |
| 1 | Roll of plastic | | |
| 1 | Box - 1 ¼" sheet metal screws 5# | | |
| 8 | 20' Ratchet straps | | |
| 14 | Bedding Kit (Pillow and Air bed) | | |
| 2 | Digital Antenna | | |
| ? | Sealed Buckets for Hard drives | | |
| 3 | Rubber boots large | | |
| 3 | Rubber boots XL | | |
| 3 | Rubber boots 2XL | | |
| 3 | Rain suits large | | |
| 3 | Rain suits XL | | |
| 3 | Rain suits 2XL | | |

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| | | | |
|---|---|---|---|
| 2 Rolls | Heavy plastic | | |
| 6 packs | D-cell batteries | | |
| 6 packs | C-cell batteries | | |
| 6 packs | AA-cell batteries | | |
| 4 of each | 120V submersible pumps and hoses | | |
| | | | |
| | | | |
| | | | |

# APPENDIX 2: HURRICANE FOOD LIST

**This list of items should be maintained in the warehouse during Hurricane Season and should be inventoried each year before June 1.**

| Amount | | Item | Initial | Date |
|---|---|---|---|---|
| 3 | boxes | lasagna noodles | | |
| 3 | jars | Rague meat sauce | | |
| 3 | boxes | Velveeta shells and cheese with bacon | | |
| 2 | boxes | Homestyle ham and cheese | | |
| 1 | boxes | Homestyle Country chicken | | |
| 2 | bags | pinto beans | | |
| 2 | bags | spaghetti noodles | | |
| 2 | lbs | Rice | | |
| 1 | can | parmesan cheese | | |
| 6 | cans | chicken noodle soup packs | | |
| 1 | pkg | party mix | | |
| 2 | cans | Bush baked beans | | |

| | | | | |
|---|---|---|---|---|
| 2 | pkg | fruit Jell-O packs | | |
| 2 | pkg | fruit cocktail | | |
| 2 | cans | whole potatoes | | |
| 2 | cans | Veg All | | |
| 2 | bags | vegetable soup starters | | |
| 2 | cans | beef stew | | |
| 2 | cans | chicken and dumplings | | |
| 2 | cans | tamales | | |
| 2 | pkg | tuna starter kits | | |
| 3 | cans | bar-b-que pork | | |
| 4 | cans | ham | | |
| 2 | cans | chili | | |
| 4 | cans | red beans | | |
| 2 | cans | potato and ham chowder soup | | |
| 2 | boxes | individual cookies | | |
| 2 | boxes | crackers | | |
| 1 | 6-pkg | orange juice | | |
| 1 | 4-pkg | grape juice | | |
| 1 | jar | dried onions | | |
| 2 | 12-pkg | pudding | | |
| 1 | bottle | olive oil | | |
| 2 | bottle | Crisco Oil | | |
| 2 | bags | pinto bean seasoning | | |

| | | | | |
|---|---|---|---|---|
| 4 | boxes | breakfast bars | | |
| **Amount** | | **Item** | **Initial** | **Date** |
| 2 | jars | pancake mix | | |
| 2 | jars | mixed nuts | | |
| 2 | boxes | popcorn | | |
| 1 | pkg | Pringles | | |
| 2 | Bottles | Pancake Syrup | | |
| 4 | Bottles | Peanut butter | | |
| 1 | Pallet | Bottled Water | | |
| | | | | |
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| Amount | | Item | Initial | Date |
|---|---|---|---|---|
| 4 | pkg | Hamburger Patties | | |
| 10 | boxes | Pizzas | | |
| 4 | boxes | Eggos | | |
| 4 | boxes | Lasagna | | |
| 6 | pkg | Hotdogs | | |
| 2 | pkg | Frozen French Fries | | |
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Freezer

CALPINE®
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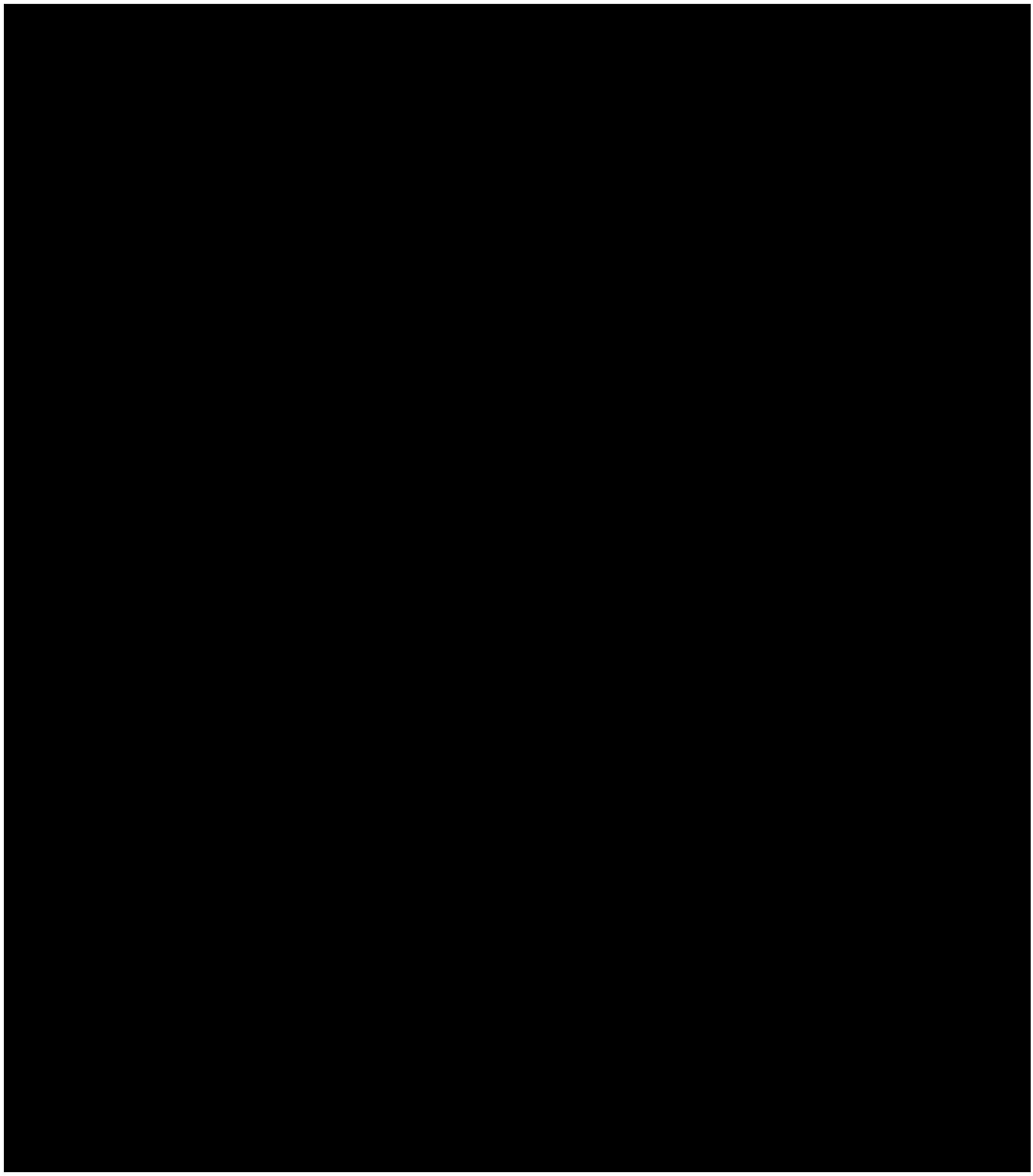
# Policy Manual



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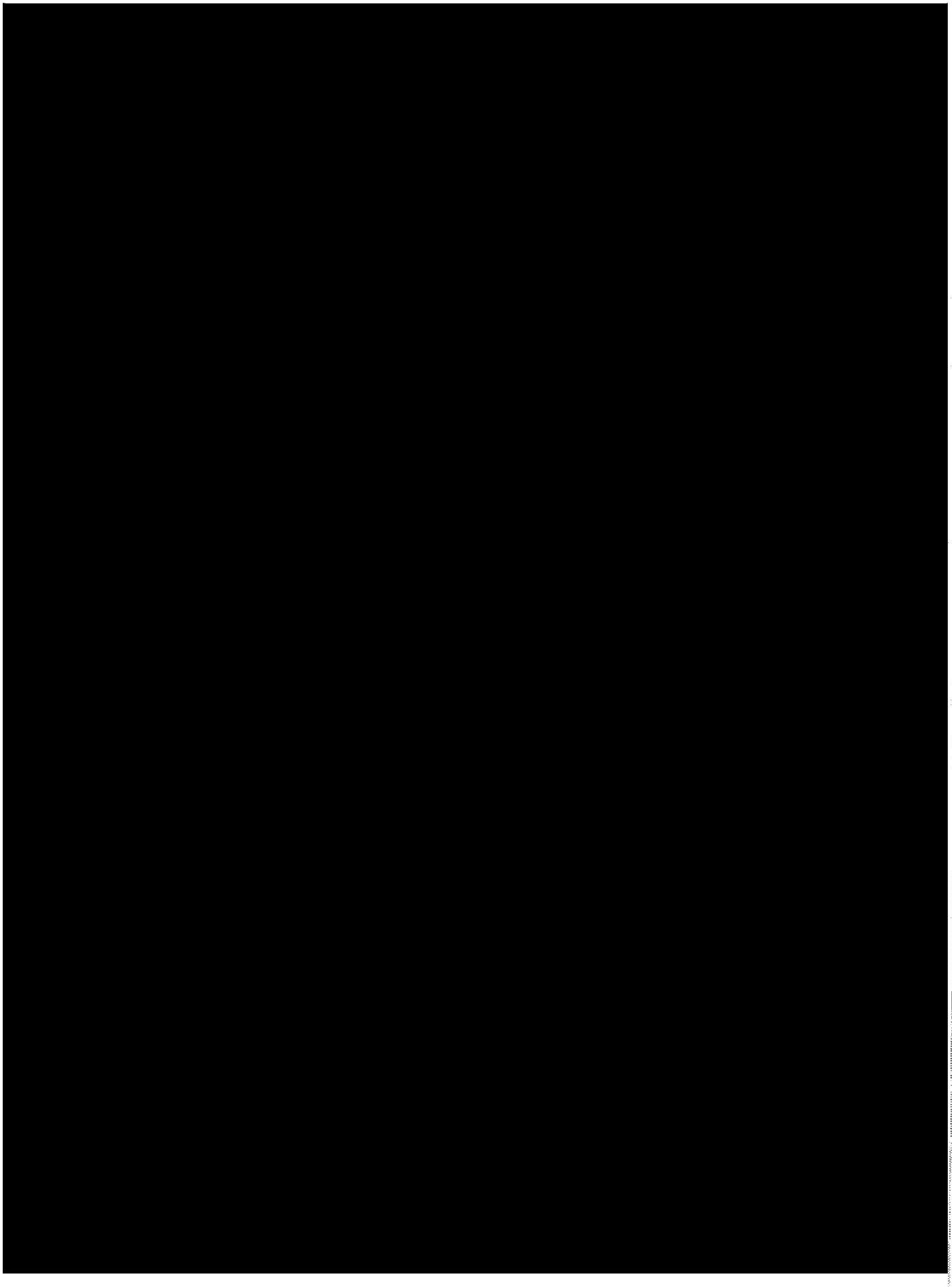

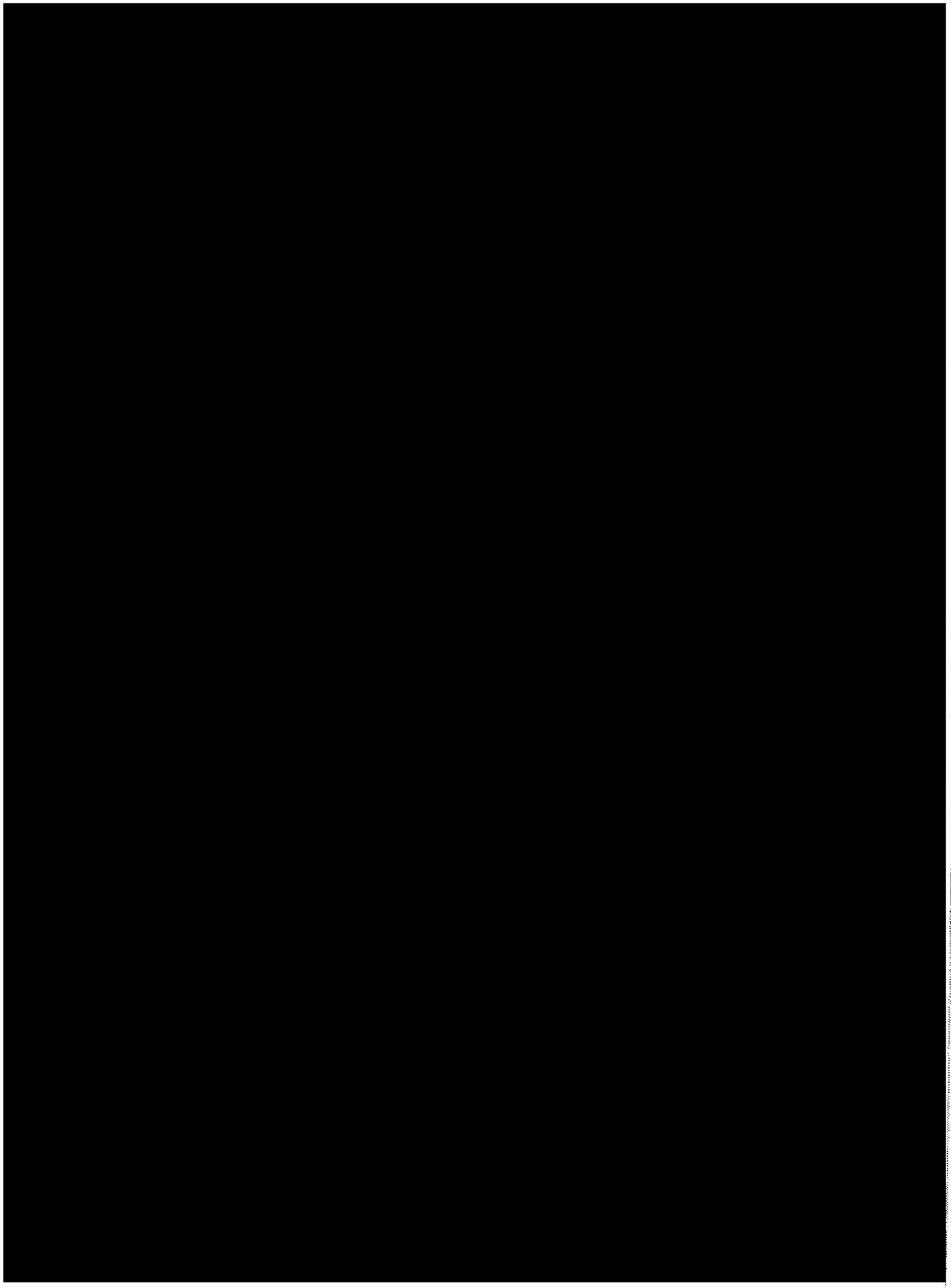

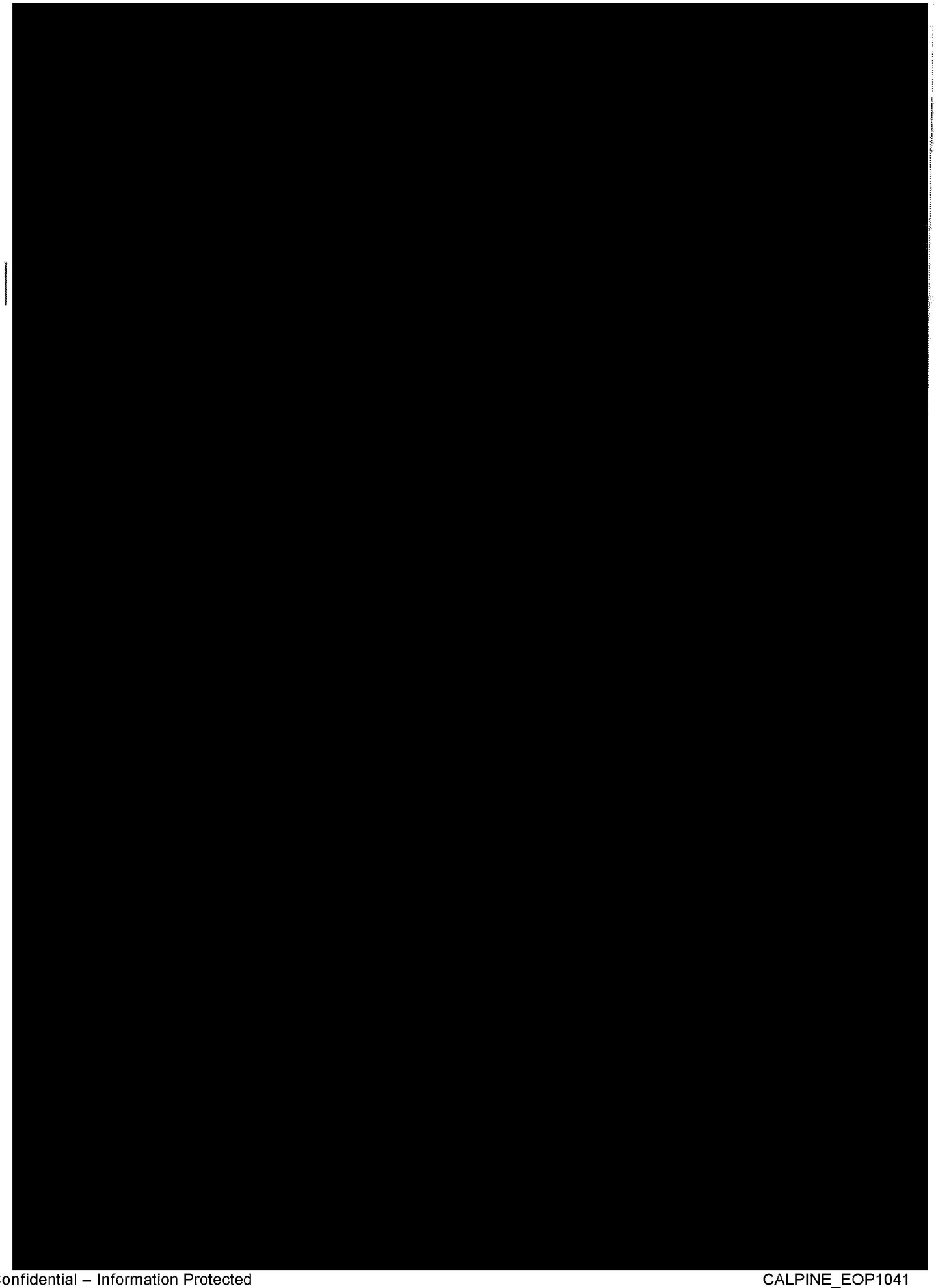

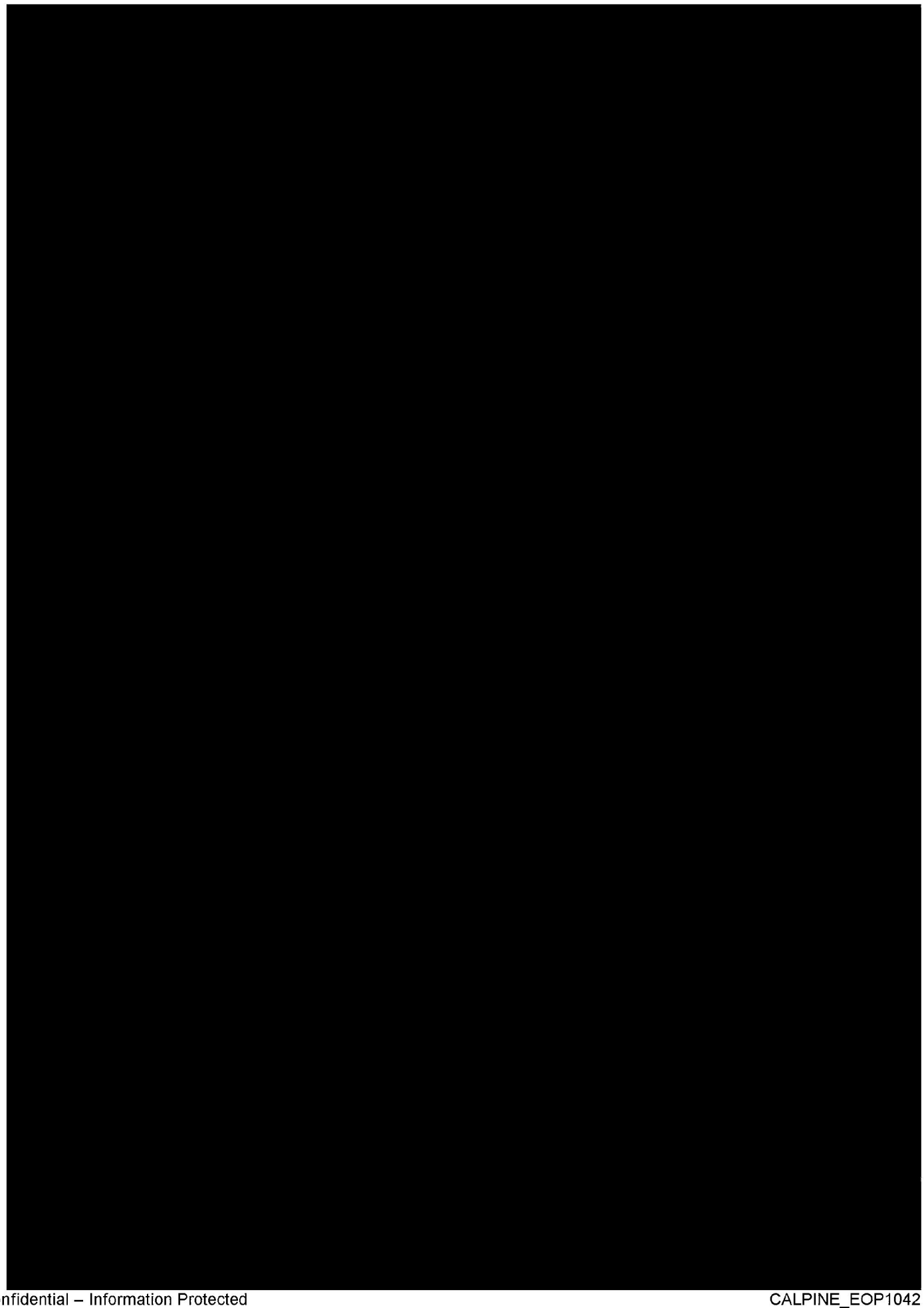

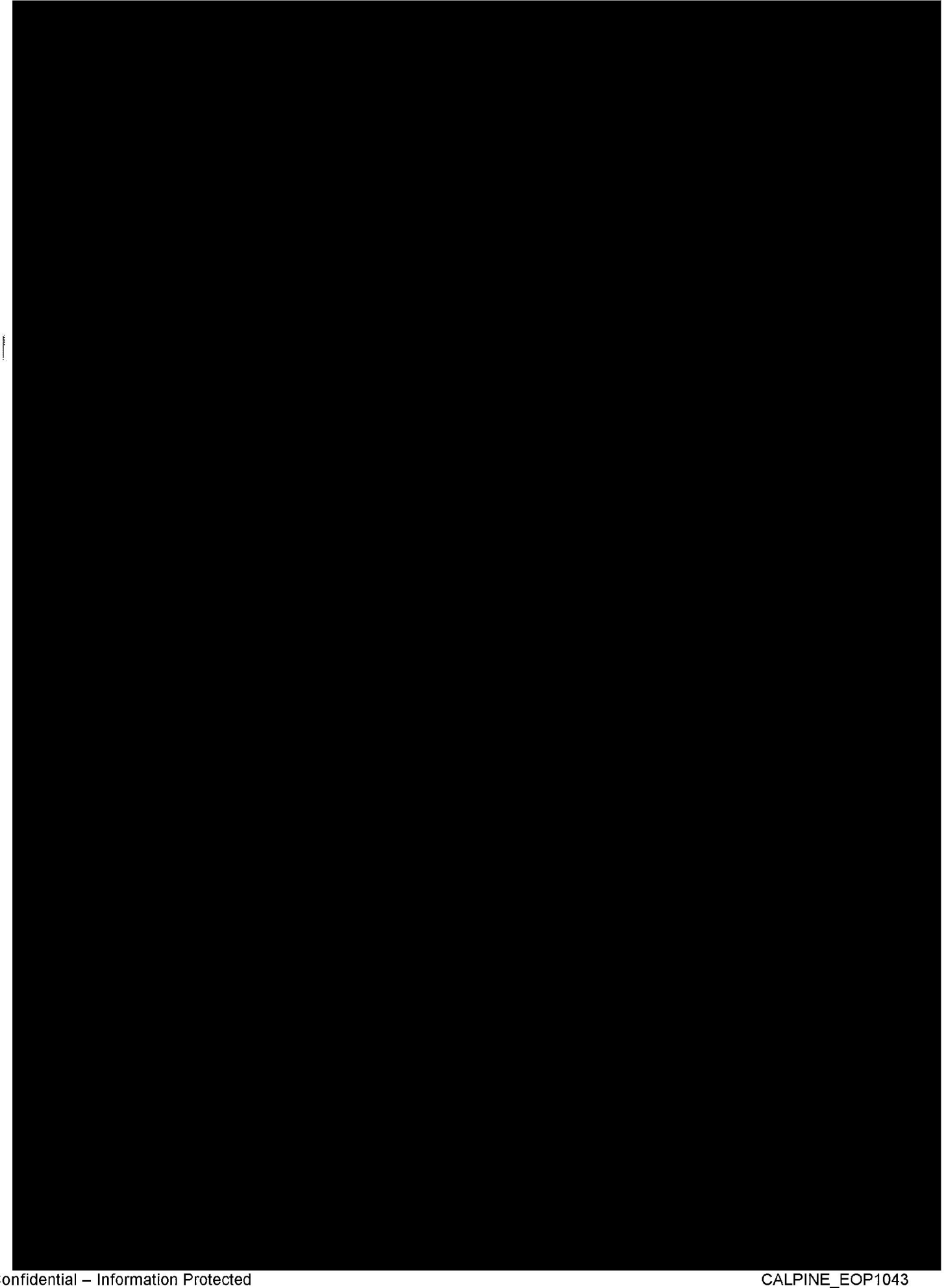

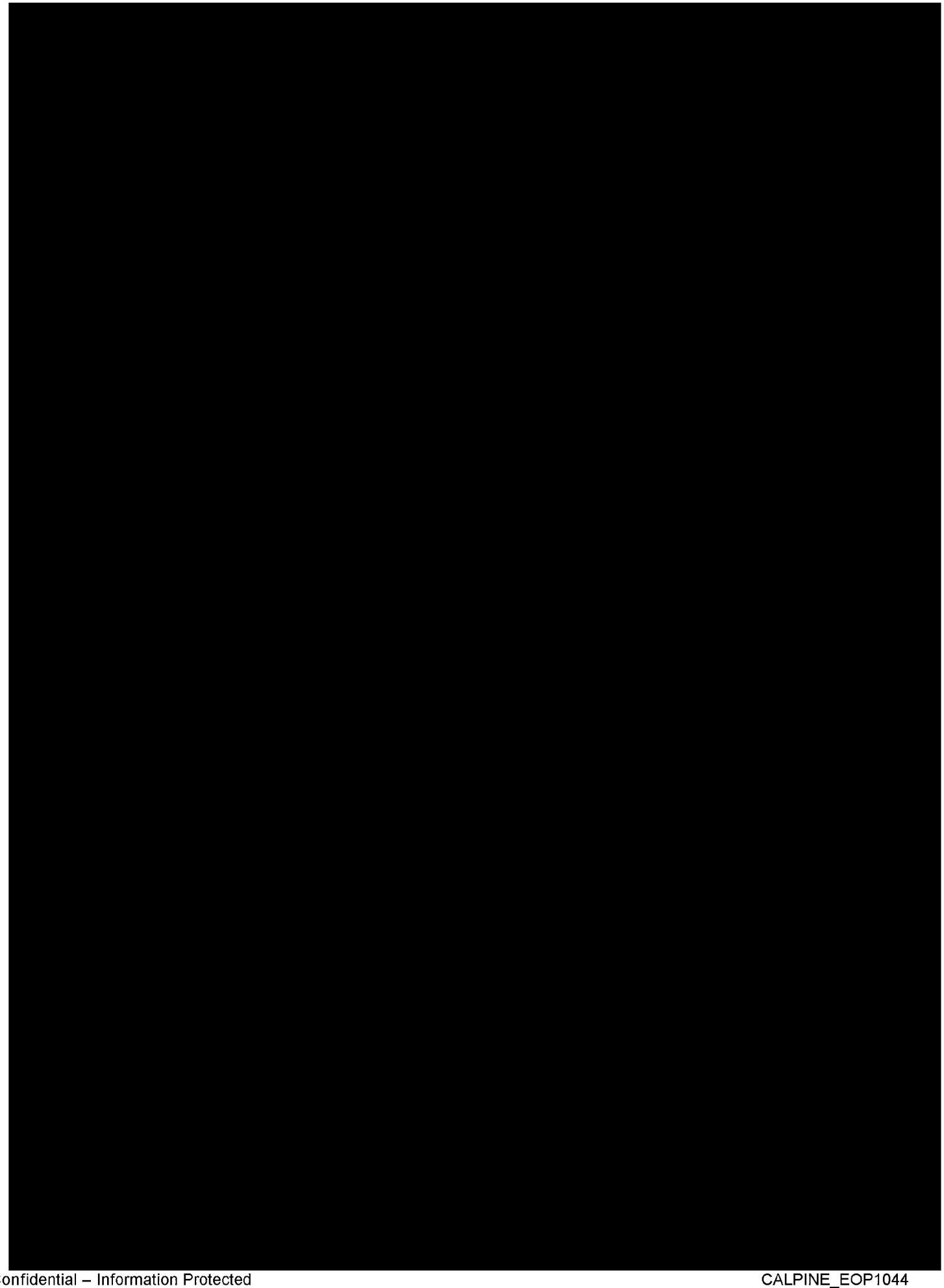

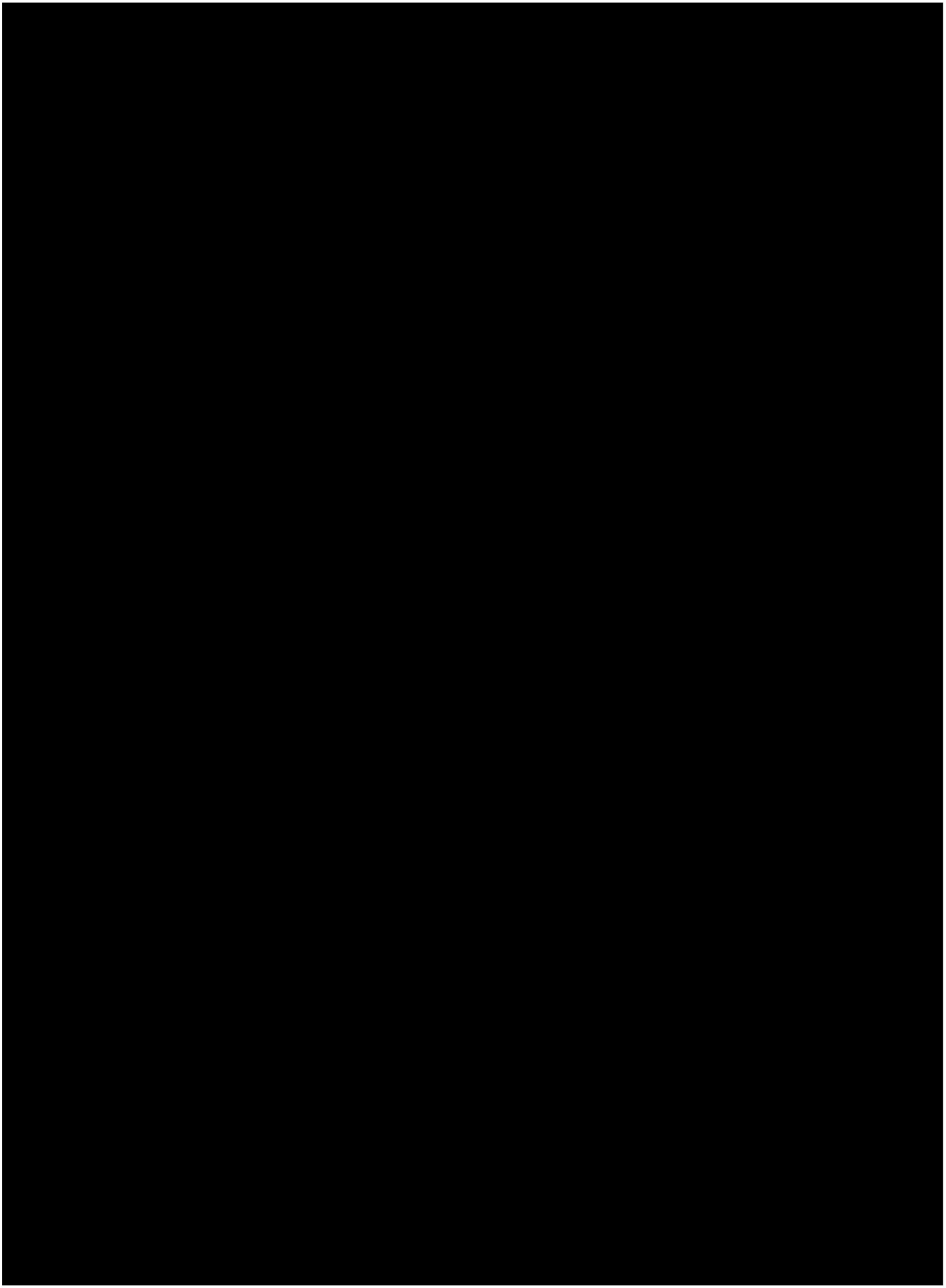

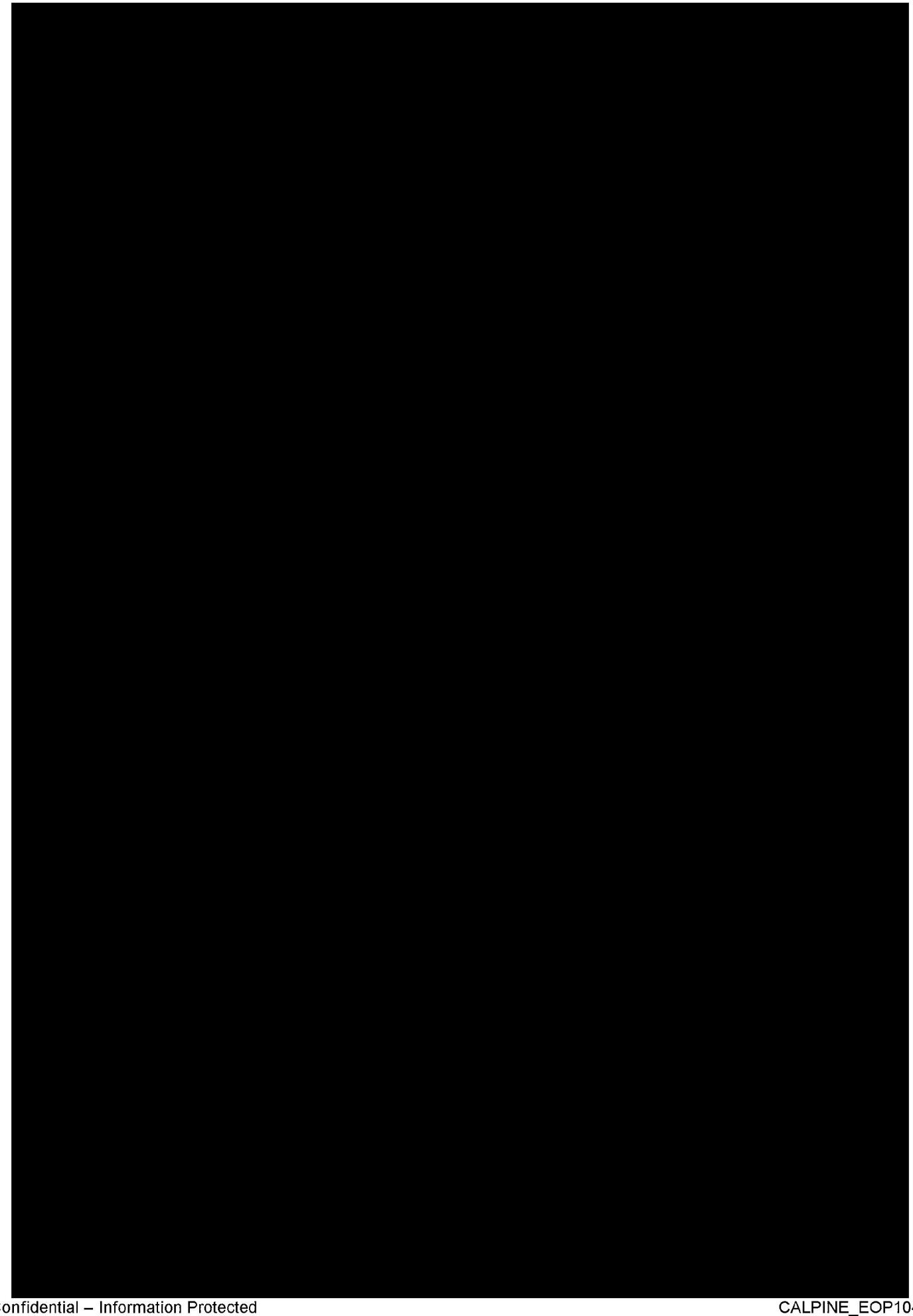

## APPENDIX 4: HURRICANE PREPARATION CHECKLIST

| Step | Action | Lead | Completed |
|---|---|---|---|
| 1 | Notify all plant employees of potential storm impact. | Site Managers | |
| 2 | Review wind speed forecast to determine if a site evacuation might be warranted (Hurricane). | Plant Manager | |
| 3 | Review storm surge forecast to determine if a site evacuation might be warranted (Hurricane). | Plant Manager | |
| 4 | Request Supply Chain Services raise purchase card single purchase and monthly credit line limits to $10,000 and $25,000 respectively. | RVP | |
| 5 | If the Impacted Plant is to be evacuated due to anticipated flooding caused by the forecasted storm surge, attempt to install temporary cofferdams to protect the Impacted Plant from the floodwaters (Hurricane). | Plant Manager | |
| 6 | If the Impacted Plant is to be evacuated, then contact Records Management and make arrangements to relocate plant vital records (Hurricane). | Business Manager | |
| 7 | Notify Storm Crew of activation (Hurricane). | Site Managers | |
| 8 | Determine release time for the Storm Crew so that they can prepare their homes and families for the approaching storm. Have Storm Crew report back to the site on _____ at _____ (Hurricane). | Plant Manager | |
| 9 | Shield building windows (e.g., board up with plywood, tape glass panes, etc…) to protect windows from breakage by excessive wind pressure or wind generated missiles (Hurricane). | Maintenance Manager | |
| 10 | Ensure portable buildings, portable toilets, mobile office trailers are removed from the plant site or are properly secured using ground anchors. | Maintenance Manager | |
| 11 | Top off all bulk chemical storage tanks (Hurricane). | Operations Manager | |
| 12 | Top off all exterior water storage tanks (Hurricane). | Operations Manager | |
| 13 | Ensure sufficient Hydrogen is on site to purge all Hydrogen cooled generators (Hurricane). | Operations Manager | |
| 14 | Ensure sufficient Carbon Dioxide is on site for all CarDox Storage Tanks (Hurricane). | Operations Manager | |
| 15 | Ensure sufficient Carbon Dioxide is on site to purge all Hydrogen cooled generators (Hurricane). | Operations Manager | |
| 16 | Top off all gasoline and diesel fuel storage tanks on site. If the plant does not have bulk fuel storage tanks, consider installing temporary gasoline and diesel storage tanks until normal fuel supplies are restored after the storm (Hurricane). | Operations Manager | |
| 17 | Ensure sufficient water treatment chemicals are on site (Hurricane):<br>Water Treatment Plant<br>Cooling Tower<br>HRSGs<br>Boilers | Operations Manager | |
| 18 | Return all inoperable plant equipment or systems to service, if possible. Priority is to be set by Operations Management in anticipation of a loss of off-site power (Hurricane). | Operations Manager | |
| 19 | Ensure Standby Generator is fully operational. If not equipped with a Standby Diesel Generator, attempt to rent a portable generator large enough to power essential electrical loads (e.g., 100 kW or larger, etc…) (Hurricane). | Operations Manager | |
| 20 | Ensure DCS Backup Tapes are updated (Hurricane). | Maintenance Manager | |
| 21 | Ensure any PLC ladder logics are backed up (Hurricane). | Maintenance Manager | |
| 22 | For plants that use a Jockey Pump to maintain fire water header pressure, perform a weekly diesel fire pump run to ensure the diesel fire pump is fully operational (Hurricane). | Operations Manager | |

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| | | | |
|---|---|---|---|
| 23 | Verify all visitors have left site. | Business Manager | |
| 24 | Ensure additional portable toilets are staged for future use (e.g., inside warehouse, water treatment building, turbine building, etc…) (Hurricane). | Business Manager | |
| 25 | Ensure adequate medical supplies, AED, Stokes basket, etc… are available and stored in designated area. Consider re-location of all medical bags to the Control Room (Hurricane). | Operations Manager | |
| 26 | Order necessary Hurricane supplies. Any needed Hurricane supplies should be delivered to the site no later than 24 hours before arrival of Hurricane force winds at the Impacted Plant site. Refer to Appendix 1 (Typical Hurricane Supplies) for recommended items (Hurricane). | Business Manager | |
| 27 | Check site drainage ditches and culverts for blockage. Have blocked channels cleared, if necessary. | Operations Manager | |
| 28 | Consider installing a diesel power water pump in the plant waste water sump to allow pumping waste water offsite in the event of a loss of offsite power. An alternative to this is to stage frac tanks adjacent the waste water sump to provide supplemental surge capacity for the waste water sump (Hurricane). | Maintenance Manager | |
| 29 | Verify doors and covers on outside equipment such as Transformers, Switchyard Equipment, Fire Hose Stations, Deluge Valve Houses, Electrical Packages, Accessory Compartments, CEMS Buildings, Electrical Panels, etc… are securely closed. | Operations Manager | |
| 30 | Ensure all outdoor gantry cranes are secured with lock bolts if possible and raise crane hook(s) to the top (Hurricane). | Maintenance Manager | |
| 31 | Ensure all boom cranes are placed in a boom down position if possible (Hurricane). | Maintenance Manager | |
| 32 | Move miscellaneous equipment into the inside any available building (e.g., trashcans, portable eyewash stations, portable ladders, etc…). | Operations Manager | |
| 33 | Establish a Storm Crew parking in an area shielded from the wind if possible (Hurricane). | Operations Manager | |
| 34 | Ensure contact information (i.e., Alternative Phone Number and Alternative e-mail in Caliber) for all site employees is up to date (Hurricane). | Plant Manager | |
| 35 | Test Control Room satellite phone to ensure it is operational by calling the CES dispatch desk (Hurricane). | Operations Manager | |
| 36 | Ensure CES has instructions on how to call Control Room Satellite phone. Perform communication check by having CES call the Control Room Satellite phone (Hurricane). | Operations Manager | |
| 37 | Instruct Non-Essential Personnel to secure their work areas prior to departure. | Plant Manager | |
| 38 | Initiate communications with Steam Host site preparedness and operating plan. | Plant Manager | |
| 39 | When possible, secure all unnecessary work onsite. | Maintenance Manager | |

| Step | Action | Lead | Completed |
|---|---|---|---|
| 40 | Release Non-Essential Personnel at least 24 hours before arrival of hurricane force winds at the Impacted Plant (Hurricane). Non-Essential Personnel shall be paid in accordance with CPN-208 (Inclement Weather and Natural Disaster Pay Policy) once the step is implemented. | Plant Manager | |
| 41 | Prior to 40 mph winds arriving at the Impacted Plant:<br><br>Initiate actions to setup sleeping areas (Hurricane).<br>Setup a temporary a smoking area that is shielded from gale force winds. | Maintenance Manager | |
| 42 | Plant Manager permission is required for any Storm Crew member to leave plant site or travel offsite. Callback and/or return times shall be required (Hurricane). | Plant Manager | |
| 43 | If Hurricane force winds are projected to impact the plant (sustained winds in excess of 74 miles per hour at plant site), ensure that all exterior doors, hatches, window storm shutters, and vital areas are secure (Hurricane).<br>If windows are not equipped with storm shutters, board-up or reinforce with adhesive tape as deemed necessary. | Operations Manager | |
| 44 | Establish a Storm Crew personal vehicle parking in an area shielded from the wind if possible (Hurricane). | Operations Manager | |
| 45 | Move company vehicles and equipment into the available buildings if possible (Hurricane). | Operations Manager | |
| 46 | Prior to arrival of 40 mph winds onsite:<br>Lower all mast lights.<br>Relocate all Storm Crew personnel to the Control Room building. | Plant Manager | |
| 47 | If the site is to be evacuated, then ensure (Hurricane):<br>All gas and steam turbines removed from service and are placed on the turning gear.<br>All auxiliary boilers are removed from service.<br>All Natural Gas Emergency Stop Valves are closed at the plant's main gas supply regulator skid(s). | | |
| 48 | Immediately prior to evacuating the site (Hurricane):<br>ENSURE at least ONE battery charger per battery is in service for each battery bank.<br>ENSURE all battery breaker output breakers are OFF/OPEN before evacuating plant.<br>ENSURE any standby generators are placed removed from service and made incapable of automatically starting on a loss of AC power if auto-start capable.<br>Notify RVP and CES plant is ready to be evacuated when above actions are completed. | Operations Manager | |
| 49 | When leaving the site during an evacuation (Hurricane):<br>ENSURE DCS backup files are loaded on the company server AND the Plant Manager shall take possession of the backup media.<br>ENSURE any PLC ladder logic is loaded on the appropriated laptop computer or storage media AND the Plant Manager shall take possession.<br>The Plant Manager shall take possession of any petty cash onsite and retain it until returning to the site.<br>Notify RVP and CES when plant site has been evacuated. | Plant Manager | |

# APPENDIX 5: STORM CREW VOLUNTEER LIST

**2020**

The volunteer list for the Storm Crew will be posted or solicited via email on May 1 and should be completed no later than June 1. (*The storm crew will be for the full year and will encompass Winter storms)

**During a hurricane, a minimum crew of 12 members (6 operator, 2 ICE Techs, 2 Mechanical Techs, and 2 Managers) will be designated from the volunteers on the list. The team members are as follows:**

| Operations | Alternates |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| **IC&E** | **Alternates** |
| 1 | |
| 2 | |
| **Mechanical** | **Alternates** |
| **1** | |
| 2 | |
| **Management** | |
| **1** | |
| 2 | |

**APPENDIX 6: HURRICANE RECOVERY CHECKLIST**

| Step | Action | Lead | Completed |
|---|---|---|---|
| 1 | When the Hurricane has passed the Impacted Plant AND sustained wind speeds are less than 40 mph AND flood waters are no longer present at the site, Hurricane Recovery Plan should be implemented at the Impacted Plant(s). | RVP | |
| 2 | Ensure Storm Crew personnel are relieved as soon as practical after implementing this checklist. | Plant Manager | |

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|---|---|---|---|
| 3 | Inspect protective relays for dropped flags and make mandatory reports as necessary. | Operations Manager | |
| 4 | Place standby generators in service if necessary. Priority should be given to repowering the following (in order of importance):<br>1. Building and plant lighting<br>2. Control Room and vital equipment area HVAC systems<br>Standby generators should be removed from service as soon as the plant can be back fed from the grid.<br>ENSURE the standby diesel generator governor is in the SPEED DROOP mode if the generator is going to be paralleled with the grid when bringing offsite power back into the plant. The generator will trip on overcurrent if the governor is left in the ISOCHROUNOS mode. | Operations Manager | |
| 5 | Inspect fire detection system for damage. | Maintenance Manager | |
| 6 | Inspect fire suppression system for damage. | Maintenance Manager | |
| 7 | ENSURE ALL Deluge Valves are manually isolated prior to returning Fire Water System to service if the firewater header was depressurized during the storm.<br>This action will prevent the inadvertent actuation of the deluge valves and allow the valves to be properly armed and returned to service without actuating. | Operations Manager | |
| 8 | As applicable, place the Fire Water Jockey Pump in service if possible. If a motor driven fire pump cannot be placed in service, consider placing the diesel driven fire pump in service in order to return the Fire Protection System to service. | Operations Manager | |
| 9 | Standby generators should be removed from service as soon as the plant can be back fed from the grid.<br>ENSURE the standby diesel generator governor is in the SPEED DROOP mode if the generator is going to be paralleled with the grid when bringing offsite power back into the plant. The generator will trip on overcurrent if the governor is left in the ISOCHROUNOS mode.<br>This step is an ongoing action. When it can be performed it should be performed. | Operations Manager | |
| 10 | As Battery Room/Compartment Ventilation Fans are returned to service, then return the corresponding battery charger(s) to their normal operational lineup per the appropriate Operations procedure. | Operations Manager | |
| 11 | When at least one battery charger per battery bank is energized, then place the associated battery output breaker in its normal operational lineup per the appropriate Operations procedure. | Operations Manager | |
| 12 | Identify Essential Personnel and/or work groups for recovery and relief response duties. | Site Managers | |
| 13 | The BCMT should contact the local emergency management agency in order to have Essential Personnel and vendors exempted for any mandatory curfews. | BCMT | |
| 14 | The BCMT should contact the local emergency management agency to arrange free passage for Essential Personnel and vendors through quarantined areas. | BCMT | |
| 15 | Inspect site perimeter fences and access gates for damage. | Operations Manager | |
| 16 | Check plant communications system are operational:<br>· Company intranet<br>· Land line telephone system<br>· VOIP telephone system ·<br>Cell phones<br>· Request IT deploy remote communications equipment to the plant site if needed.<br>· IT shall contact the satellite internet provider and have satellite internet service established at the plant(s) were needed. | Operations Manager | |
| 17 | Inspect switchyard for damage. | Operations Manager | |
| 18 | Inspect GSUs and other site outdoor transformers for damage. | Operations Manager | |
| 19 | Inspect Cooling Towers for damage. | Operations Manager | |
| 20 | Inspect outdoor storage tanks for damage. | Operations Manager | |

| | | | |
|---|---|---|---|
| 21 | Inspect outdoor electrical cabinets for water intrusion. Dry out as needed. | Maintenance Manager | |
| 22 | Inspect outdoor instrument cabinets for water intrusion. Dry out as needed. | Maintenance Manager | |
| 23 | Outdoor motors should be meggered before starting if the motor space heaters were deenergized during the storm. | Maintenance Manager | |
| 24 | Inspect all site buildings for damage. | Maintenance Manager | |
| 25 | Inspect all exterior structures and piping for damage. | Maintenance Manager | |
| 26 | When any needed repairs have been completed, begin preparations for resuming normal plant operations in accordance with site procedures. | Plant Manager | |
| 27 | Notify Steam Host and CES when resumption of normal operations is possible. | Plant Manager | |

| | | | |
|---|---|---|---|
| 28 | Request Human Resources notify Non-Essential Personnel when they should return to work or begin working remotely if possible. | RVP | |
| 29 | Determine if any governmental notifications are required due to excess emissions, spills, exceedance of wastewater discharge limit, etc.... | Plant Manager | |
| 30 | Coordinate with Environmental Services to determine if discretionary enforcement should be discontinued if approved. | RVP | |
| 31 | Begin removing storm preparation materials (this list is not all inclusive):<br>· Remove window missile barriers and store for future use.<br>· Secure diesel driven support equipment when possible.<br>· Remove any door restraints.<br>· Remove any temporary berms or flood barriers. | Maintenance Manager | |
| 32 | Drain rainwater from all containment berms as determined necessary. | Operations Manager | |
| 33 | Arrange to supply Essential Employees with fuel for their personal use if local fuel supplies are disrupted due to the Hurricane strike. | Maintenance Manager | |
| 34 | Arrange for the following deliveries in support of plant needs (this list is not all inclusive): | Operations Manager | |
| | · Caustic · CEMS gases<br>· Acid · Drinking water, soft drinks, sports drinks, etc…<br>· Diesel fuel · Specialty water treatment chemicals<br>· Gasoline · Flashlight batteries<br>· Food · Lab supplies, reagents, etc… | Operations Manager | |
| 35 | Arrange for longer term berthing area in support of plant personnel that are unable to return home. | Plant Manager | |
| 36 | Undistributed non-perishable food is to be returned to the plant food storage locker. Perishable food and goods may be disposed of in any manner at the Plant Manager's discretion. | Plant Manager | |
| 37 | Mast lights should be raised back into position based on weather conditions. Dry weather is needed to perform safely. | Maintenance Manager | |
| 38 | Company vehicle(s) should be returned to normal parking areas. | Operations Manager | |
| 39 | Company equipment should be returned to normal parking areas. | Maintenance Manager | |
| 40 | Remove lock bolts from Outdoor Gantry Cranes if installed. | Maintenance Manager | |
| 41 | Remove miscellaneous equipment brought from permanent storage locations (e.g., trashcans, portable fire extinguishers, etc...) and return to them to their normal locations in the plant. | Operations Manager | |
| 42 | Reestablish normal smoking areas. | Operations Manager | |

| | | | |
|---|---|---|---|
| 43 | Corporate Communications should establish periodic updates between the local county government regarding open travel routes, road closures, and gas availability to facilitate the return of plant personnel. | RVP | |
| 44 | Arrange for longer term berthing area in support of critical personnel that are unable to return home. | Plant Manager | |
| 45 | Arrange for cooling centers at the plant site for employees and their families if the local area is experiencing extended power and/or water outages. | Plant Manager | |
| 46 | Restoration activities after release of Storm Crew: | Plant Manager | |
| | • Frac Tanks - drain and then remove from site. | | |
| | • Other actions as deemed necessary by Plant Management. | | |
| 47 | When local conditions will permit, request Records Management to return all evacuated plant vital records to the plant. | Business Manager | |
| 48 | When recovery actions are complete, return purchase card single purchase limit to normal value. | RVP | |
| 49 | When billing month ends and recovery actions are complete, return purchase card monthly credit limit to normal value. | RVP | |
| 50 | When recovery actions are complete, return excess emergency petty cash to Accounts Payable. | Business Manager | |

# Channel Energy Center Hurricane Preparedness and Action Plan

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Confidential – Information Protected Pursuant to 16 TAC § 22.71(d); 16 TAC § 25.362; ERCOT Protocol 1.3; Tex. Gov. Code § 552.101 (under Texas Homeland Security Act) and § 552.110

CALPINE_EOP1054

## HURRICANE DUTY PAY PROCEDURE

Refer to Calpine Inclement Weather and Natural Disaster Pay Policy
Policy number CPN-208 Effective April 1, 2015

## HURRICANE POLICY

A list of personnel volunteering for hurricane duty will be obtained prior to hurricane season. These volunteers will be become the "Hurricane Crew". All others not on this list will become the "Non-Essential Personnel". The goal is to have two full crews of Operations Personnel for a Day and a Night shift and at least one Craftsperson from each trade per shift.

CEC will attempt to staff the Hurricane crew with volunteers. If there are not enough volunteers, the Operation Technicians scheduled to work the shifts (that are not replaced with volunteers) will be expected to stay through the hurricane operation and from that time forward be known as "Hurricane Crew".

Once the word has been given that this policy will become effective in the near future, half of the Hurricane Crew will report to the plant while the other half of the crew readies their Family and home for the potential bad weather. The Hurricane Crew with the most members currently at work will remain while the other half of the crew makes preparations at home first. During that time, the Hurricane Crew that is at work will be paid based on the current pay policy (CPN-212) and not the Inclement Weather policy.

The crews will then swap so that the crew members that have been at work can prepare their Family and homes prior to returning for Hurricane duty.

The Operations Manager will coordinate with the Host Refinery to meet their steam, water and electrical needs to insure the safety of the Refinery plant personnel and/or equipment.

It is the intention of Management to maintain the operations of the plant until such time that the safety of plant personnel and/or equipment is threatened or until the plant is unable to export power due to transmission line problems.

Should it become necessary to shut the plant down and evacuate the area, a minimum number of volunteers from the Hurricane Crew will be asked to remain on the plant site.

After the plant is shut down, should the winds be expected to reach 110 mph, all Hurricane Crew members remaining at the plant will be evacuated to the Refinery Central Control Location.

The Site Manager or his designee will make final decisions as to what steps



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will be taken and when they occur.

## PURPOSE

This Hurricane Procedure has been developed to assure that the Channel Energy Center plant and its employees are prepared in the event a tropical storm or hurricane weather condition should threaten to strike the upper Texas coast.

This procedure provides information and outlines steps to protect personnel and equipment against the possible destruction of a hurricane, and is a guideline to follow rather than a set of rigid rules. The severity, speed and expected area of landfall will determine the time that these steps will be taken. The Channel Energy Center plant relies on the National Weather Service broadcasts for the latest changing weather conditions and the probability values for possible landfall of a tropical storm or hurricane. Weather information is also available by calling Lyondell for a Severe Weather Update at [redacted]

Depending on the intensity and track of the storm and other applicable considerations, the expectation is that a decision will be made by Lyondell at least 62 hours (2.9 days) in advance of the arrival of a category 1,2, or 3 storm and 78 hours (3.25 days) in advance of a category upper 3 and all 4 and 5 storms, as to whether or not the Refinery will be operated during the storm. For the safety of all personnel on site and the environment, Channel Energy Center will continue to provide steam and/or electricity to the Lyondell Refinery until their units are safely secured.

For better preparedness and smooth transitions in case of the threat of a tropical storm or hurricane this procedure has been divided into six phases of readiness. These six phases have been developed in conjunction with the storm threat and LHR hurricane procedures. The six phases and their definitions are listed below.

**PHASE I** the beginning of hurricane season. (JUNE 1st)

**PHASE II STORM/HURRICANE ALERT** A tropical storm/hurricane has formed and is threatening to enter or has entered the Gulf of Mexico but is not an immediate threat.

**PHASE III STORM/HURRICANE WATCH** A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to the immediate area within the next 36 hours.

**PHASE IV STORM/HURRICANE WARNING** A tropical storm/hurricane is predicted to make landfall in the immediate area within a 24-hour period.



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**PHASE V HURRICANE DUTY** A tropical storm/hurricane will make landfall within the next 12 hours. Set the HURRICANE CREW watch.

**PHASE VI POST HURRICANE** The time following the hurricane until the Site Manager or his designee sounds the all clear.

The following steps are based solely on ensuring that employees of Calpine CEC have sufficient time to prepare their homes and families prior to the storm.

**PHASE 1** (JUNE 1st, the beginning of hurricane season)

All personnel begin closely monitoring local weather forecasts and national weather broadcasts for early signs of Tropical Storm warnings.

All personnel will review the Hurricane Procedure, which will be formally reviewed in the May Safety Meeting every year.

The Site Manager will call a management meeting to discuss the plant and personnel weather emergency readiness.

All personnel will begin early preparations, which include, plant wide housekeeping, proper stowage, and inventory. This also includes readiness at home as well.

The Operations Manager will contact the Calpine Corporation home office. Plans should be made for the transfer of files should this become necessary.

The Operations Manager and the Maintenance Manager will survey the plant for equipment and/or items not deemed necessary, and should make arrangements to have this equipment removed from site.

All CROs will confirm the telephone and emergency telephone numbers of employees and which will be included in this manual.

The warehouse will maintain during hurricane season a stock of the necessary emergency supplies.

The volunteer list for the hurricane emergency crew will be posted and should be completed by no later than the end of May.

## PHASE II: TROPICAL STORM/HURRICANE ALERT

A tropical storm/hurricane has formed and is threatening or has entered the Gulf of Mexico, but is not an immediate threat to our area.



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**Management will meet and discuss the following:**

Storm location and direction of travel.

Areas of responsibility.

Plant readiness and implementation of Phase II action.

Formally implement Phase II.

**Once phase II is formally implemented take the following steps:**

The control room operator will announce all weather bulletins.

All employees and contract employees should start making family plans and preparations at home: at least 48-hours before storm is predicted to make landfall.

The following in-plant preparations should be implemented:

Move mobile equipment to safe area to be tied down as necessary.

Remove all loose items throughout the plant and store, i.e. air hoses, ladders. Secure all fire extinguishers to beams/mounting brackets using duct tape.

Verify tie-downs on any chemical trailers.

Remove all unnecessary contracted equipment from plant.

Order acid, caustic, and any other chemicals as needed to fill tanks respectively. The Hydrochloric Acid (HCl) acid tank is only good for 24-36 hours of regeneration capability; therefore order enough to ensure that we have enough acid during the hurricane.

Remove any empty gas bottles from the site. Secure bottles throughout the plant, including those in the bottle racks, using duct tape or rope.

The Operations Manager will contact LHR and determine their intentions. He will advise them that any change in their operation status must be communicated through our control room operator.

The control room operator will keep good communications with LHR, Centerpoint, and Calpine Energy Services to keep them posted from this point on of any change in our operations as becomes necessary.



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The CRO will contact all chemical vendors whose services may be needed after the storm has passed and inform them we may need their services within 24 hours of a storms passing.

## PHASE III: TROPICAL STORM/HURRICANE WATCH

A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to the immediate area within the next 36 hours.

**Management will meet and discuss the following:**

(a) Storm location and predictions.

(b) Estimated Time of Arrival of storm if headed in the plant's direction.

(c) Estimated time that a plant evacuation should be ordered.

(d) Areas of responsibility of "Hurricane Crew" members.

(e) Plant readiness and the formal implementation of Phase III action.

(f) Employee family readiness.

**Once phase III is formally implemented take the following steps:**

(a) The Operations Manager will have supplies stocked for Hurricane Duty Crew personnel.

(b) The CRO on duty or the Operations Mgr will contact all non-essential personnel to advise them on the status of the plant and to request information concerning their availability should they be needed.

(c) The CRO on duty or the Operations Mgr will contact the gas desk to determine the status of gas availability.

(d) The Hurricane Crew will be put on 12-hour alert status.

(e) The control room operator will continue to monitor the progression of the storm and continually update the Plant Management.

(f) The LHR emergency broadcast radio will be closely monitored for their plant status changes, which will determine steam and power demands.

(g) The control room operator will update the Plant Management of any changes in status of LHR, the Gas Desk, or Calpine Energy Services.

(h) The CRO will keep a thorough log of all broadcasts and happenings as they occur.



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## PHASE IV: TROPICAL STORM/HURRICANE WARNING

A tropical storm/hurricane is predicted to make landfall in the immediate area within a 24-hour period. Hurricane Crew is to report to the plant and allow non-essential personnel to depart.

**Management will meet and discuss the following:**

(a) Storm location, size, category, predictions and possible storm surge.

(b) Estimated Time of Arrival of storm.

(c) Plant and LHR readiness, and Calpine Energy Services communications, evacuation times, implementation of the Hurricane Duty Crew, local authorities' emergency information, and possibility of plant shutdown.

(d) Formal implementation of PHASE IV.

**Once PHASE IV is formally implemented take the following steps:**

(a) The DCS Technician makes computer back-up files.

(b) The CRO on duty will contact LHR Main Gate Dispatch and provide them a list of the employees left on site.

(c) The Operations Manager will discuss with LHR steam and power demands, and availability of water along with their operating plans.

(d) The Operations Manager will contact the Gas Desk and inform them of operations plans and gas needs. Emergency numbers will be exchanged.

(e) The Maintenance Mgr will ensure that all company vehicles are filled with fuel.

(f) The Operations Manager and/or Maintenance Manager will develop a final list of all plant personnel and emergency telephone numbers where they may be contacted.

(g) The CRO or his designee will check the status of radios and batteries.

(h) The Hurricane Crew upon returning to the plant site will do the following:
1. Report to the control room.
2. Make a plant walk through.
3. Meet with the plant management and be briefed on plans, strength of the storm, Lyondell plans, possible plant shutdown and evacuation.
4. Relieve the operations and maintenance personnel on duty.
5. Continue to monitor weather updates throughout the storm.



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## PHASE V: HURRICANE DUTY

A tropical storm/hurricane is predicted to make landfall in the immediate area within a 12-hour period.

(a) The Operations Manager, Maintenance Mgr and a CRO (if available) will make a walk-through of the plant to insure its readiness for storm conditions.

(b) The CRO will maintain his crew inside the control building and not allow any venturing outside during high winds.

(c) No ***one*** person shall venture out into the plant alone, tag teams of two may go out in an emergency with the following equipment: Hard hats, safety harness with lanyard of no more than 10 feet in length, rubber boots and gloves, safety glasses with side shields, wet weather gear.

(d) If evacuation becomes necessary, the Operations Mgr will notify his Lyondell contact and the Main Gate Dispatch of his plans for evacuation.

## PHASE VI: POST HURRICANE:

The time following the passage of a hurricane until the Site Manager or his designee issues the all clear.

**Following the passage of the hurricane and the subsidence of possible floodwaters, the following should be done:**

(a) As the storm passage allows, the Hurricane Crew members will tour the plant to assess the damage incurred. Pictures should be taken of damage.

(b) As soon as possible, the Operations and Maintenance Mgrs should contact the remaining plant personnel to check on their health and safety. Any new contact numbers should be taken at that time. Each employee should be asked about his or her availability to report to work.

(c) Those returning to work should check the news prior to leaving home and take extreme caution in avoiding high water especially at freeway underpasses.

(d) Be on the lookout for downed power lines and avoid entering water where they may be laying.

(e) All individuals that are on the job site or entering the job site must take extreme caution. Some of these hazards are as follows:

1. Due to the possibility of high water, care must be taken when driving or walking in the plant.



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2. There could be a possibility of electrical shock due to flooding of cable vaults, motor starters and switches. Extreme caution must be taken when working near this equipment.

3. Contamination of drinking water is possible due to flooding, so only bottled water should be consumed until the "all-clear" is given on the condition of the drinking water.

4. There may be items of debris blown throughout the plant.

5. Check power lines and transformers for debris laying on top.

6. Check electrical vaults for high water and pump down if possible.

7. Check secondary containment water levels to ensure it is not approaching any instrumentation or electrical connections, outlets or fittings.

8. Check all MCCS, CEMS shelters, DPU and Excitation cabinets for water intrusion.

## DUTIES AND RESPONSIBILITIES

Responsibilities during a hurricane emergency will follow normal operating routine. Special responsibilities are listed below.

**Employees:**

(a) Report to work as scheduled until such a time that weather conditions make it impractical, or management/local law enforcement otherwise advises you.

(b) After a storm: All employees who have evacuated the area should remain outside of storm damaged area until the all clear is given by the local law enforcement agencies. In some cases, it may be necessary to show proof that you live or work in the area to get past roadblocks that may be set up.

(c) Stay in touch with Management for scheduling changes.

**Plant Management:**

(a) Meet and discuss with Lyondell Refinery their objectives / options / and plans.

(b) Meet and discuss objectives/options for the site.

(c) Direct all plant activities.

(d) Release all non-essential personnel when/if appropriate.



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## EMERGENCY SHUTDOWN PROCEDURE

This shutdown procedure is designed to give CEC plant maximum time allowable for safe shutdown and evacuation if necessary and still give enough flexibility in our plan, to stay on line in case of change of direction or force of the incoming hurricane. In the event the maximum sustained winds are predicted to be greater than 100 miles per hour, and the hurricane's course is predicted within a 50-mile radius of the City of Houston the following steps will be taken. It is important to monitor the National Oceanic & Atmospheric Administration weather radio broadcasts for updates during and after each step is taken in case of change.

(a) Shut down of CTG/HRSG's and ST will be dependent on LHR steam demands.

(b) Maintain auxiliary boiler operations to supply LCR with steam until no longer safe or needed. Up to a maximum of 75 mph.

## Hurricane Crew Hygiene & Bedding Items (Supplied by Employee)

### Hygiene

shaving cream
disposable razors
antiperspirants
shampoo
toothpaste
toothbrush
bath soap

### Bedding

Pillows
washcloths
bath towels
Sheets/blankets



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## HURRICANE AWARENESS INFORMATION:

(a) If you live or work in the Houston/Galveston area, you must be alert and prepared for the destructive force of a hurricane or tropical storm. The question in this area is not if a hurricane will hit; but rather, when will a hurricane hit?

(b) The National Oceanic and Atmospheric Administration defines hurricane as a tropical cyclone, in which winds reach constant speeds of 74 miles per hour or more, and blow in a large spiral around a relatively calm center, or the eye of the hurricane. Simply stated hurricanes are giant whirlwinds in which air moves in a large tightening spiral around a center of extreme low pressure, reaching maximum velocity in a circular band extending outwards 20 to 30 miles out from the rim of the eye. This circulation is counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. Near the center, hurricane winds may gust to more than 200 miles per hour.

(c) Because of the unpredictability and extreme danger of these storms, the Saffir/Simpson Hurricane Scale (SSHS) was developed to give an estimate of the potential property damage and flooding that can be expected along the coast from a hurricane. This scale, ranging from one to five is based on the hurricane's present intensity.

1. **Class One.** Winds 74-95 mph or storm surge 4-5 feet above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.

2. **Class Two.** Winds 96-110 mph or storm surge 6-8 feet above normal. Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.

3. **Class Three.** Winds 111-130 mph or storm surge 9-12 feet above normal. Some structural damage to small residences and utility buildings. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet may be flooded inland 8 miles or more.

4. **Class Four.** Winds 131-155 mph or storm surge 13-18 feet above normal. Potential of complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet above sea level may be flooded inland as far as 6 miles.

5. **Class Five.** Winds 155 mph or storm surge greater than 18 feet above normal. Complete roof failure on many residences and industrial buildings. Some



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complete building failure with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet above sea level and within 500 yards of the shoreline. Massive evacuation for residential areas on low ground within 5-10 miles of shoreline may be required.

## HURRICANE TERMINOLOGY:

- **GALE WARNINGS:** When winds of 38-55 MPH are expected.
- **HURRICANE:** A closed low-pressure circulation in the tropics with winds in excess of 74 MPH.
- **HURRICANE WARNING:** Hurricane force winds or high tides and seas are expected to strike this area within 24 hours.
- **HURRICANE WATCH:** Hurricane may threaten this area within 24 to 36 hours.
- **SMALL CRAFT ADVISORY:** When issued in conjunction with possible hurricane conditions for this area, advises a small craft operator to take precautions and not to venture into the open Gulf.
- **TROPICAL DEPRESSION:** An area of disturbed weather in the tropics that has the potential of storm development.
- TROPICAL STORM: A closed low-pressure circulation at the surface in the tropics with winds 39 to 73 MP



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- **Introduction**

The severity, speed and expected area of landfall will determine the time that each of the steps will be taken. The Corpus Christi Energy Center relies on the National Weather Service broadcasts for the latest changing weather conditions and the probability values for possible landfall of a tropical storm or hurricane.

Depending on the intensity and track of the storm the plant **may** be operated during the storm. Corpus Christi Energy Center will then continue to provide steam and/or electricity to the Citgo Plant.

**High Winds**

Tropical storms have sustained winds from 39 to 74 miles per hour (mph). The National Hurricane Center (NHC) issues a Tropical Storm Watch when an area may be threatened by a tropical storm within 36 hours. They issue a Tropical Storm Warning when an area may be affected by a storm within 24 hours.

Hurricanes have sustained winds of at least 75 mph. Hurricane Watches and Warnings are issued when an area may be threatened by a hurricane within 36 and 24 hours, respectively.

A hurricane's intensity is rated according to the Saffir-Simpson Hurricane Scale, which provides an estimate of potential property damage and flooding along the coast from a hurricane landfall. Wind speed is the determining factor in the scale, as described below:

| DEFINITION OF HURRICANE CATEGORIES: | | |
|---|---|---|
| Category 1 | Wind speeds between 74-95 MPH with 4-5 feet of storm surge | Minimal storm damage |
| Category 2 | Wind speeds between 96-110 MPH with 6-8 feet of storm surge | Moderate storm damage |
| Category 3 | Wind speeds between 111-130 MPH with 9-12 feet of storm surge | Extensive storm damage |
| Category 4 | Wind speeds between 131-155 MPH with 13-18 feet of storm surge | Extreme storm damage |

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| | | |
|---|---|---|
| Category 5 | Wind speeds exceeding 156 MPH with more than 18 feet of storm surge | Catastrophic storm damage |

- **General Guidelines**

Guidelines are listed below for conditions leading up to and including a hurricane striking the area. The following guidelines will be observed in preparation for a hurricane:

| DEFINITION OF PLANT TROPICAL STORM / HURRICANE CONDITIONS: | |
|---|---|
| Condition Yellow | Tropical storm with a probability of becoming a hurricane and tropical force winds are expected within 96 hours. |
| Condition Orange | Tropical storm with a probability of becoming a hurricane and tropical force winds are expected within 48 hours. |
| Condition Red Category 1 or 2 | Tropical force winds expected within 24 hours. When a decision is reached by the Plant Manager the facility will be in a reduced operating mode with steam still provided to Citgo. |
| Condition Red Category 3 or greater | Tropical force winds expected within 24 hours. When a decision is reached by the Plant Manager the facility will be shut down and evacuated. |
| Condition White (All Clear) | Weather conditions have stabilized and conditions are safe to return to the plant |

  - NOTE: The above definitions for Conditions are for general reference only. In actual practice, Hurricane Conditions will be set based on the type and severity of the storm as well as other factors. Each condition will be evaluated and declared by the Plant Manager.

- **Preparing for Hurricane Season**

Corpus Christi Energy Center is located near the coast and could be affected by storm surge, strong winds and heavy rains. We will implement the following beginning May 1.

  - All personnel begin closely monitoring local weather forecasts and National Weather Service broadcasts for early signs of Tropical Storm warnings.

  - All personnel will review the Hurricane Procedure, which will be formally reviewed in the May Safety Meeting every year.

  - All personnel will begin early preparations, which include, plant wide housekeeping, proper stowage, and inventory. This also includes readiness at home as well.

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- The plant will be surveyed for equipment and/or items not deemed necessary, and arrangements should be made to have this equipment removed from site.

- Confirm the telephone/cellphone numbers of employees. These numbers will be readily accessible in the control room.

- The warehouse will maintain, during hurricane season, a stock of the necessary emergency supplies in accordance with Hurricane Supply List below.

- The volunteer list for the hurricane emergency crew will be posted and should be completed by no later than the end of May.
- 
- The window coverings will be inspected to see if any need to be replaced by Maintenance Department.

- **Tropical Storm / Hurricane Threat**

1. When a tropical storm/hurricane has formed and is threatening or has entered the Gulf of Mexico, but is not an immediate threat to our area.

   **Management will meet and discuss the following:**

   (a) Storm location and direction of travel.

   (b) Areas of responsibility.

   (c) Plant readiness

2. When a tropical storm/hurricane is in the Gulf of Mexico and a potential threat and tropical force winds are expected within 96-hours.

   **Management will meet and discuss the following:**

   (a) Storm location and predictions.

(b) Estimated Time of Arrival of storm should it be determined if headed in our direction.

(c) Areas of responsibility.

(d) Plant readiness and the formal implementation of Condition Yellow actions in accordance with the Hurricane Checklist Appendix 11.

3. When a tropical storm/hurricane is predicted to make landfall in the immediate area and tropical force winds are expected within 48-hours.

**Management will meet and discuss the following:**

(a) Storm location, size, category, predictions and possible storm surge.

(b) Estimated time of arrival of storm.

(c) Employee family readiness.

(d) Plant and Hosts readiness, and Calpine Energy Services communications.

(e) Formal implementation of the Hurricane Checklist Condition Orange of the Hurricane Checklist below

4. When a tropical storm/hurricane is predicted to make landfall in the immediate area and tropical force winds are expected within 24-hours.

**Management will meet and discuss the following:**

(a) Storm location, size, category, predictions and possible storm surge.

(b) Estimated time of arrival of storm.

(c) Employee family readiness.

(d) Activation of the Hurricane Duty Crew

(e) Plant and Hosts readiness, and Calpine Energy Services communications.

(f) Formal implementation of the Hurricane Checklist Condition Red of the Hurricane Checklist below.

(g) Possibility of plant shutdown and evacuation depending on the predicted severity of the storm.

5. As the storm passes, the Plant Manager or designee will issue the Condition White (All Clear) of the Hurricane Checklist Appendix 11. At such time:

(a) The Hurricane Duty Crew members will tour the plant to assess the damage incurred. Pictures should be taken of damage.

(b) As soon as possible, each employee should contact the plant. A contact number should be given to the Ride-Out Crew Manager. Each employee should inform the Ride-Out Crew Manager as to his or her availability to report to work.

(c) All individuals that are on the job site or entering the job site must take extreme caution. Some of these cautions are as follows:

1. Due to the possibility of water action and undermining, care must be taken when driving or walking in the plant.

2. There could be a possibility of electrical shock due to flooding of motor starters and switches. Extreme care must be taken when working in close proximity to this equipment.

3. Pollution of drinking water due to high tides could be possible. Until the city has given the all clear to the potable water system, bottled water only should be consumed.

4. There may be items of debris blown partially free or hanging precariously. Broken glass will pose a problem on the ground. Special care must be taken when walking under equipment.

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## Hurricane Emergency Checklist

**DESCRIPTION:** **This Checklist is to be used as a guide in the event of a Pre-hurricane Watch, Hurricane Watch, Hurricane Warning, Hurricane Condition, or Post-Hurricane Condition.**

**Date commence checklist** / /

**Storm Name** _____

**Date of anticipated landfall** / /

| | **CONDITION YELLOW: PRE-HURRICANE WATCH - Tropical Force Winds expected within 96 hours** | **Date & Time** | **Initials** |
|---|---|---|---|
| | **Begin Preliminary preparations to protect equipment and property.** | | |
| 1 | Begin communication with the hosts to keep them up to date on plant conditions and operational schedule. | | |
| 2 | Ensure the Control Room monitors battery operated radio and/or local OEM website for official instructions | | |
| 3 | Plant Manager to conduct meeting with plant staff to discuss storm status and course of action if storm continues on course. | | |
| 4 | Empty rental porta potties. Place empty commodes along the fence and strap them in place for later use. | | |
| 5 | Inform personnel of pertinent information such as hurricane classification, plant status, potential safe areas, primary assembly areas, potential evacuation routes and preplanning action items. | | |
| 6 | Issue notification to hurricane team personnel to ready personal property in preparation for sequestering at the plant. | | |
| 7 | Confirm that the Emergency Diesel Generator is fully ready for service and has been test operated. | | |
| 8 | Schedule fuel delivery to top off EDG and any portable fuel tanks | | |
| 9 | Complete a site FOD walk down. Anchor or relocate everything on-site (plant property, 138KV switchyard, pump house) that has a potential to go airborne in high winds (dumpsters, garbage cans, signs, air hoses, fire extinguishers, spill kits, pallets, | | |

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| | | | |
|---|---|---|---|
| | etc.) | | |
| 10 | Schedule refill of hydrogen trailers | | |
| 11 | Order spare hydrogen and CO2 bottles in case the units need to be purged or they purge automatically. | | |
| 12 | Confirm that the storm water drains are clean and free of debris | | |
| 13 | Confirm that all transmitter and instrument junction box clips are secure and or protected from water intrusion and any degraded junction boxes are securely wrapped in plastic. | | |
| 14 | Confirm that all compartment and administrative access doors are closed and secure and any that will not latch closed are blocked from being blown open. | | |
| 15 | Secure the warehouse doors from being blown open. When the power is turned off, the security system will unlatch the doors. | | |
| 16 | Contact Sanitary Disposal Company to pump out holding tanks | | |
| 17 | Confirm that the Elementis Pump House Sump Pump is operational | | |
| 18 | Remove all unnecessary contracted equipment from the plant. | | |
| 19 | Have contractors secure their work areas | | |
| 20 | Contact corporate AP and request increase of P-card purchasing limit. | | |
| 21 | Call and have drinking water supply replenished | | |
| 22 | Have all empty gas bottles picked up | | |
| 23 | Tightly secure all gas bottles along the fence line and at the CEMS buildings. | | |
| 24 | Determine storm path and severity and make hotel reservations as necessary. | | |
| Date and Time | | | |

| | | | |
|---|---|---|---|
| | Completed | | |
| | | | |
| **CONDITION ORANGE: HURRICANE WATCH - Tropical Force Winds expected within 48 hours** | | **Date & Time** | **Initials** |
| **Mobilize and take action necessary to protect equipment and property** | | | |
| 1 | Continue communication with the hosts to keep them up to date on plant conditions and operational schedule. | | |
| 2 | Verify all requirements of condition yellow are complete. | | |
| 3 | Plant Manager to conduct meeting with plant staff to discuss storm status and course of action if storm continues on course. | | |
| 4 | Call in additional personnel for hurricane preparations as necessary | | |
| 5 | Have the Hurricane Team continue protection of personal property if needed in preparation for returning to the plant. | | |
| 6 | Relocate all empty and full chemical totes in to the water treatment building | | |
| 7 | Ensure all chemical base tanks are full | | |
| 8 | Fill the fuel tanks for the company vehicles. | | |
| 9 | Fill all mobile equipment and store them in their designated area. | | |
| 10 | Install plywood boards on all windows. | | |
| 11 | Fill water tanks (City, Condensate and Demin) and keep topped off. Maintain inventory >90%. | | |
| 12 | LOTO, disconnect and elevate one Seawater Makeup Pump motor | | |
| 13 | Charge Satellite phones | | |

| | | | |
|---|---|---|---|
| 14 | As necessary, notify hurricane team of required arrival time | | |
| | Date and Time Completed | | |
| | | | |
| **CONDITION RED: HURRICANE WARNING - Tropical Force Winds expected within 24 hours** | | **Date & Time** | **Initials** |
| **(To be used if expected hurricane to be a category 1)** | | | |
| 1 | Verify all requirements of Condition Orange are complete. | | |
| 2 | Continue communication with the hosts to keep them up to date on plant conditions and operational schedule. | | |
| 3 | Plant Manager to conduct meeting with plant staff to discuss storm status and course of action if storm continues on course. | | |
| 4 | Communicate with Calpine Dispatch and thermal host regarding electrical and steam needs. | | |
| 5 | T-24 Hurricane team on site and dismiss non-essential personnel as early as possible | | |
| 6 | T-18 Shutdown one combustion turbine and begin crank cooling. | | |
| 7 | T-18 Shutdown the STG and break vacuum to facilitate rotor cool down. | | |
| 8 | T-6 Coordinate and secure steam to FHR | | |
| 9 | Manually isolate FHR steam at suggested valves 0ES019, 0ES019A, 0ES020 and 0ES020A | | |
| 10 | T-6 Coordinate and secure steam to Elementis | | |
| 11 | Manually isolate Elementis steam at suggested valve 0ES013 | | |
| 12 | LOTO all cooling tower fans and tether the fan blades. Ensure that if the shaft guards are removed, that they are brought down off the cooling tower and stored in the warehouse. | | |

| | | | |
|---|---|---|---|
| 13 | T-6 Transfer steam loads to the Auxiliary Boilers | | |
| 14 | T-6 Shutdown the second combustion turbine and begin crank cooling. | | |
| **CONDITION RED: FINAL PREPARATIONS for Hurricane Conditions** | | **Date & Time** | **Initials** |
| **(To be used if expected hurricane to be a category 1)** | | | |
| 1 | Continue to operate AXBs to provide steam to Citgo | | |
| 2 | Ensure the Control Room monitors battery operated radio and/or local OEM website for official instructions | | |
| 3 | Fill the neutralization tank with water | | |
| | Date and Time Completed | | |
| **CONDITION RED: HURRICANE WARNING - Tropical Force Winds expected within 48 hours** | | **Date & Time** | **Initials** |
| **(To be used if expected hurricane to be a category 2 or greater)** | | | |
| 1 | Verify all requirements of Condition Orange are complete. | | |
| 2 | Plant Manager to conduct meeting with plant staff to discuss storm status and course of action if storm continues on course. Discuss all possible meeting points to return to the plant once the storm has passed. | | |
| 3 | Begin communication with the hosts to keep them up to date on plant conditions and operational schedule. | | |
| 4 | Communicate with Calpine Dispatch and thermal host regarding electrical and steam needs. | | |
| 5 | Review power shutdown procedure with operators | | |
| 6 | T-48 Shutdown one combustion turbine and begin crank cooling. | | |
| 7 | T-48 Shutdown the STG and break vacuum to facilitate rotor cool down. | | |

| | | | |
|---|---|---|---|
| 8 | T-36 Begin CO2 purge of shutdown CT generator | | |
| 9 | T-24 Hurricane team on site and dismiss non-essential personnel as early as possible | | |
| 10 | T-24 Transfer steam loads to the Auxiliary Boilers | | |
| 11 | T-24 Coordinate and secure steam to FHR | | |
| 12 | Manually isolate FHR steam at suggested valves 0ES019, 0ES019A, 0ES020 and 0ES020A | | |
| 13 | T-24 Coordinate and secure steam to Elementis | | |
| 14 | Manually isolate Elementis steam at suggested valve 0ES013 | | |
| 15 | T-24 Shutdown the second combustion turbine and begin crank cooling. | | |
| 16 | Begin hydrogen purge to CO2 on second generator at the completion of crank cooling. | | |
| 17 | T-14 Coordinate and secure steam to Citgo and return condensate from Citgo. | | |
| 18 | Manually isolate Citgo steam at suggested valves 0ES123, 0ES123A, 0ES124 and 0ES124A | | |
| 19 | T-14 Shutdown AXBs and begin forced cool down | | |
| 20 | LOTO all cooling tower fans and tether the fan blades. Ensure that if the shaft guards are removed, that they are brought down off the cooling tower and stored in the warehouse. | | |
| 21 | Ensure the city water, return condensate and demin tanks are >90% full. | | |
| **CONDITION RED: FINAL PREPARATIONS for Hurricane Conditions (To be used if expected hurricane to be a category 2 or greater)** | | **Date & Time** | **Initials** |
| **(To be used if expected hurricane to be a category 2 or greater)** | | | |
| 1 | Place the EDG in Manual to prevent Auto Start on loss of power and disconnect batteries. | | |

| | | | |
|---|---|---|---|
| 2 | Fill the neutralization tank with water | | |
| 3 | Manually isolate the hydrogen trailers for the CTs. | | |
| 4 | Ensure CT lube oil systems are shutdown | | |
| 5 | Isolate CO2 fire system tanks to the CTs | | |
| 6 | Manually isolate City water to the plant at suggested valves 0WD150 and 0WD152 | | |
| 7 | Manually isolate refinery gas to the duct burner mixing skid at suggested valves 0NG175A and 0NG175B | | |
| 8 | Manually isolate refinery gas to the AXB mixing skid at suggested valves 0NG180 and 0NG181 | | |
| 9 | Manually Isolate natural gas to the site at suggested valves 0NG203, 0NG141, 0NG149 and 0NG892 then depressurize the entire gas system through the FG-4s | | |
| 10 | Isolate all fire main to the deluge and building sprinkler systems prior to shutting down the air compressors. | | |
| 11 | Open the HRSG startup vent MOVs to help reduce plant steam pressure. | | |
| 12 | Open condenser drain valve and make sure the vacuum breaker is open | | |
| 13 | Shutdown the rest of the operating equipment. Make sure the circ water system is the last system shutdown due to helping to condense remaining plant steam going to the condenser | | |
| 14 | Strip the PEECC DC panels of all loads | | |
| 15 | Force the STG off turning gear. | | |
| 16 | Shutdown control systems for Water Treatment and Ovation for the STG and CTGs. | | |
| 17 | Open all switchyard high voltage breakers then shutdown the DCS system. | | |

| | | | | |
|---|---|---|---|---|
| 18 | | Strip all station battery DC panels of all loads. | | |
| 19 | | Remove all DCS, Ovation and Water Treatment hard drives and place them in a water tight container for removal from the plant. | | |
| 20 | | Last breaker opened in the plant with be the station battery disconnect breaker. | | |
| 21 | | Disable the gate and install chain and lock on the way out. | | |
| 22 | | Verify the following are on hand if evacuating: | | |
| | *a* | Hurricane book with all critical contact information and checklists | | |
| | *b* | satellite phones | | |
| | *c* | hurricane re-entry letters and credentials | | |
| | *d* | camera | | |
| | *e* | extra fuel | | |
| | *f* | Calpine placards | | |
| | *g* | The O&M manuals | | |
| | *h* | The laminated copy of the P&IDs | | |
| | *i* | A copy of the ERG | | |
| | *j* | A copy of the safety manuals | | |
| | *k* | The system valve lineup book | | |
| | *l* | A copy of the Master Schematic books | | |

| | | | | |
|---|---|---|---|---|
| | *m* | NERC Manuals | | |
| | *n* | A copy of the SPCC | | |
| | *o* | All personnel files and audiometric testing files from the Business Manager | | |
| | *p* | Take all of the confined space sniffers. | | |
| | | Date and Time Completed | | |
| | | | | |
| **CONDITION WHITE: POST-HURRICANE CONDITIONS - Hurricane conditions have subsided and officials deem it is safe to go outdoors** | | | **Date & Time** | **Initials** |
| **ALL COMMUNICATIONS WITH THE HOSTS OR ANY OUTSIDE PARTIES ABOUT THE PLANT CONDITION WILL BE DIRECTED TO THE PLANT MANAGER ONLY.** | | | | |
| 1 | | Using the buddy system, conduct a security sweep of the plant | | |
| 2 | | Establish a command center in the control room. Use the plant radios on Channel 2 because they do not go through the repeater. | | |
| 3 | | Evaluate the power feed to the site including a visual inspection of the North Oak Park Substation. | | |
| 4 | | Survey the plant for material condition. Conduct inspections per the Hurricane Re-entry Inspection checklist. | | |
| 5 | | Contact Citgo and find out the status of the fire main system. This is vital for the transformer deluge systems. | | |
| 6 | | Open all 4160V motor load breakers | | |
| 7 | | Open all of every MCC breakers with the exception of the HVAC. This usually means that the service feed breakers that feed the panels that provide power to the MCCs will need to stay closed. | | |
| 8 | | If restoring power on the EDG and the DCS is not energized, need to pull out the red button on the front of the local EDG panel to over ride the DCS emergency stop command to the EDG. | | |

| | | | |
|---|---|---|---|
| 9 | Once the EDG is started, energize the station battery charger on the Admin MCC. | | |
| 10 | If the EDG is not available but high voltage power is available and the MSU 1 and/or 2 transformers are available then power can be restored through the switchyard. | | |
| 11 | If available, set up a generator and dehumidifier in the Admin MCC room to remove the condensation. | | |
| 12 | Verify all of the breakers on closed on the 4160V building DC Panel 0DC005 | | |
| 13 | Verify all of the breakers on closed on the SUS 1 Building DC Panel 0DC006 with the exception of 0DC006-1 - STG Emergency Lube Oil Pump Breaker. Verify that this breaker is open. | | |
| 14 | When dressed out in proper PPE (arc flash suit) close the 125V DC Storage Battery Main Breaker Switch on the Admin DC Panel 0DC004. | | |
| [redacted] | | | |
| 16 | In the high voltage switchyard, close the incoming feeder breakers (2360 & 2365) from the high voltage Mimic Panel. Refer to the procedure to perform this step. | | |
| 17 | Verify that the 4160V bus is energized | | |

| | | | |
|---|---|---|---|
| 18 | Ensure that the feeder breakers from the 4160V switchgear to the SUS 1A, 1B, 2A and 2B are closed on the 4160V bus. | | |
| 19 | When power is ready to be brought back into the SUS's, there needs to be a jumper installed in on the closing circuits if the DCS is not available to allow the breaker to close. Refer to the procedure to perform this step. | | |
| 20 | Once power is restored to SUS 1&2, energize just the HVAC circuits. Check the SUSs for grounds. If grounds are indicated, open the loads until the ground clears. Let the HVAC circuits run for about 24 hours prior to energizing loads. This will allow for the building and electrical circuits to dry out | | |
| 21 | Energize the motor heater circuits as soon as practical. | | |
| 22 | Start an air compressor and ensure the transformer deluge systems are restored as soon as practical. | | |
| 23 | As systems are completed and restored, restore electrical power to the circuits and start them as needed. Ensure all support systems (fire system, deluge, CO2, CCW, Circ Water, Cooling Tower Makeup) are restored prior to starting any lube oil system. | | |
| 24 | As loads are re-energized, keep checking for AC & DC grounds and address these as they are found and either repaired or left isolated to prevent issues further on. | | |
| 25 | Contact Calpine regional VP and dispatch regarding plant status. | | |
| 26 | Restore plant control systems. Run a clean-up of the system as they are restored. | | |
| 27 | Establish H2 purity in both gas turbines. Ensure all support systems have been restored prior to starting any oil system. Use our purge procedure in the O&M manual and do it slowly. | | |
| 28 | Place turbines on turning gear. Prior to placing the STG on turning gear, check gap voltages to ensure there is no bearing damage. | | |
| 29 | Contact Calpine Gas Control to find out the status of available gas | | |

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**Hurricane Items/Supplies**

**To be inventoried and stored in the warehouse by June 1 of each year.**

| Item | Qty Required | Qty On Hand |
|---|---|---|
| Hard hats with chin straps | 8 | |
| Rubber boots large | 3 | |
| Rubber boots XL | 3 | |
| Rubber boots 2XL | 3 | |
| Rain suits large | 3 | |
| Rain suits XL | 3 | |
| Rain suits 2XL | 3 | |
| 1/2" rope | 1 roll | |
| 1/4" rope | 1 roll | |
| Duct tape | 12 rolls | |
| Heavy plastic | 2 rolls | |
| #9 wire | 1 scare | |
| D-cell batteries | 6 packs | |
| C-cell batteries | 6 packs | |
| AA-cell batteries | 6 packs | |
| 120V submersible pumps and hoses | 4 of each | |

**Completed By** **Date**

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# Hurricane Procedures Manual

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## Section 01

### HURRICANE POLICY

It is the intention of management to maintain the Operations of the plant until such time that the safety of plant personnel and equipment is threatened or until the plant is unable to export power due to transmission line problems.

Should it become necessary to shut the plant down and evacuate the area, a minimum number of volunteers from the Emergency Hurricane Crew will be asked to remain at the plant site. The crew remaining after the shutdown will monitor the storm and maintain the facility as well as possible, maintain communications and management updates, and facilitate the damage assessment and recovery efforts after the hurricane threat has passed. It is not the policy of Deer Park Energy Center management to require the Hurricane Crew members to stay throughout the event if they feel their personal safety is at risk.

Final decisions as to what steps will be taken, and when they occur, will be made by the Plant Manager.



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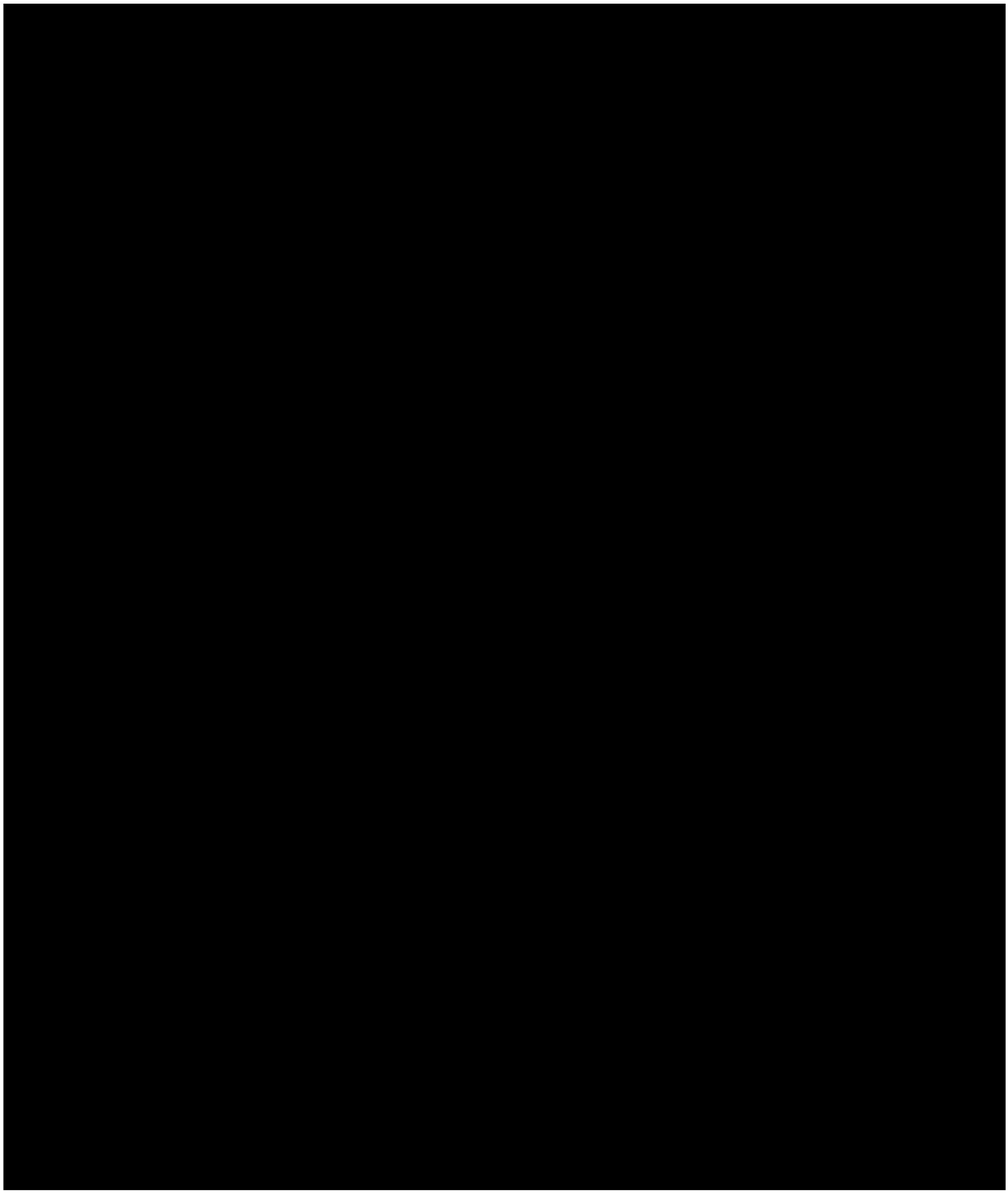

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## Section 03

**PURPOSE**

This Emergency Hurricane Procedure's Manual has been developed to assure that the DPEC Plant and its employees are prepared in the event of a tropical storm or hurricane weather condition should threaten to strike the upper Texas coast.

This procedure provides information and outlines steps to protect personnel and equipment against the possible destruction of a hurricane, and is a guideline to follow rather than a set of rigid rules. The severity, speed and expected area of landfall will determine the time that these steps will be taken. The Deer Park Plant relies on the National Weather Service broadcasts for the latest changing weather conditions and the probability values for possible landfall of a tropical storm or hurricane.

For better preparedness and smooth transitions in case of the threat of a tropical storm or hurricane this procedures manual has been divided into six phases of readiness. These six phases have been developed in conjunction with the storm threat and SHELL hurricane procedures. The six phases and their definitions are listed below.

**PHASE I** The beginning of hurricane season. (JUNE 1st)

**PHASE II STORM/HURRICANE ALERT>** A tropical storm/hurricane has formed and is threatening to enter or has entered the Gulf of Mexico but is not an immediate threat.

**PHASE III STORM/HURRICANE WATCH>** A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to the immediate area within the next 56 hours.

**PHASE IV STORM/HURRICANE WARNING>** A tropical storm/hurricane is predicted to make landfall in the immediate area within a 48 hour period. Put the EMERGENCY HURRICANE CREW on 12 hour notice.

**PHASE V HURRICANE DUTY>** A tropical storm/hurricane is predicted to make landfall within the next 36 hours. Set the EMERGENCY HURRICANE CREW watch. Begin plans for plant evacuation.

**PHASE VI POST HURRICANE>** That time following the hurricane until the plant manager sounds the all clear.



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## Section 04

**PHASE I**

**JUNE 1,** The beginning of hurricane season.

All personnel begin closely monitoring local weather forecasts and N.O.A.A. weather broadcasts for early signs of Tropical Storm warnings.

All personnel will review the Hurricane Procedures Manual, which will be formally reviewed in the May Safety Meeting of every year.

The plant manager will call a management meeting to discuss the plant and personnel weather emergency readiness.

All personnel will begin early preparations that include, plant wide housekeeping, proper stowage, and inventory. This also includes readiness at home as well.

The Business Manager will contact the Calpine Corp. home office. Plans should be made for the transfer of files should this become necessary.

Plant Management will survey the plant for equipment and/or items not deemed necessary, and should make arrangements to have this equipment removed from site.

All "A" operators and managers will confirm the telephone and emergency telephone numbers of employees and vendors, which will be included in this manual.

The warehouse will maintain during hurricane season a stock of the necessary emergency supplies.

The volunteer list for the hurricane emergency crew will be posted and should be completed by no later than the end of May.



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## Section 05

**PHASE II**

**TROPICAL STORM/HURRICANE ALERT:**
A tropical storm/hurricane has formed and is threatening or has entered the Gulf of Mexico but is not an immediate threat to our area.

**Management will meet and discuss the following:**

- Storm location and direction of travel.
- Areas of responsibility: Management, Operation team members.
- Plant readiness and implementation of Phase II action.
- Formally implement Phase II.

**When phase II has been formally implemented the following steps should be taken:**
Post and announce all weather bulletins issued by N.O.A.A. at appropriate locations. (Control room operator with the assistance of the Operations department)

All employees and contract employees should start making family plans and preparations at home .at least 36 hours before storm makes landfall.

The following in-plant preparations should be implemented:

- Move mobile equipment to safe area to be tied down as it becomes necessary.
- Remove all loose items throughout the plant and store. I.e. air hoses, fire extinguishers, ladders and any other items that may be blown away due to hurricane force winds.
- Check all portable buildings for tie-downs, tighten or tie down as necessary.
- Remove all unnecessary contracted equipment from plant.
- Operations department will begin procedures to top off all tanks.
- The shift on duty will order acid and caustic as needed to fill tanks respectively.
- The shift on duty will order the necessary supply of hydrogen bottles needed to operate the plant should the normal supply of hydrogen become unavailable.
- The shift on duty will notify the warehouse clerk of any empty or extra gas bottles needing to be removed from the site.



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- The Operations Manager will contact SHELL and determine their intentions. Also he will advise them that any change in their operation status must be communicated through our control room operator.
- The control room operator will keep good communications with Shell and CES and keep them posted from this point on any change in our Operations as becomes necessary
- The Operations Manager will make contact with vendors whose services may be needed after storm has passed and inform them we may need their services within 24 hours of a storms passing.



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## Section 06

**PHASE III**

**TROPICAL STORM/HURRICANE WATCH:**
A tropical storm/hurricane has entered the Gulf of Mexico and has become a potential threat to our area.

**Management will meet and discuss the following:**

- Storm location and predictions.
- ETA of storm should it be determined that it is headed in our direction.
- Estimated time that a plant evacuation should be ordered as it becomes necessary.
- Areas of responsibility: Management and Operations team members
- Plant readiness and the formal implementation of Phase III action.

**When phase III has formally been implemented the following steps should be taken:**

- The Operations Manager will have supplies stocked for hurricane duty personnel.
- Off duty employees will be notified by the supervisor to alert them of the operating status of the plant. Supervisors will request information concerning the availability of these people should they be needed.
- The Operations manager will contact CES and determine the status of gas availability.
- The Hurricane Emergency Crew will be put on 24 hour alert status.
- The Control Room Operator will continue to monitor the progression of the storm and will continually update the Plant Manager and staff.
- The SHELL emergency broadcast radio will be closely monitored for their plant status changes that will determine steam and power demands.
- The control room operator will update the plant manager for any changes in status of SHELL, CES and Reliant.
- The control room operator will keep a thorough log of all broadcasts and happenings as they occur for study at a later date.



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## Section 07

**PHASE IV**

**TROPICAL STORM/HURRICANE WARNING:**
A tropical storm/hurricane is predicted to make landfall in the immediate area within a 48-hour period. Hurricane force winds are imminent.

**Management will meet and discuss the following:**

- Storm location and predictions. This includes storm size category and possible storm surge.
- ETA of storm.
- Employee family readiness.
- Plant readiness, SHELL readiness, CES communications, and Evacuation time, Implementation of the hurricane crew, Local authority's emergency information and Possibility of plant shutdown.
- Formal implementation of PHASE IV.

**When PHASE IV has been formally implemented by the direct consent of the plant manager or his/her designee the following plan should be implemented:**

- The Operations Manager will notify the Hurricane Emergency standby Crew to make final preparations at home and for their families, to report back to work not later than 12 hours from the time they were put on notice. In the event a member of the Hurricane Crew is at work when Phase IV is implemented all efforts will be made to allow the individual to leave in order to make personal preparations.
- The Business Manager will begin the transfer of predetermined files to the decided upon safe location.
- The Operations Manager will direct that computer back-up discs be made and removed from the plant site to a safe location.
- Computers and DPU's will be covered with plastic to protect against water damage.
- The Operations Manager will contact the SHELL emergency department and the Deer Park Fire Department and provide them with a list of the employees that will remain in the plant.
- The Operations Manager will contact SHELL. Information concerning steam and power demands will be received. The availability of water supply and the duration of this supply will be determined.
- The Operations Manager will contact CES and inform them of Operations plans and gas needs. Emergency numbers will be exchanged.
- The operations group will verify that back-up supplies are lined up and operational.



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- The Water Specialist will verify and/or fill all company vehicles with fuel.
- The operations group will develop a final list of all plant personnel containing employee evacuation plans and emergency telephone numbers where they may be reached. This list will be given to the Emergency Standby Crew Supervisor and copies to the Hurricane Advisory Committee members to be distributed between them.
- The operations group will check the status of radios and batteries. All radios with the in plant repeater will be located and placed in the control room; radio's left over will be assigned to individuals by the Operations Manager.

The hurricane crew will report back to work after ensuring the safety of their homes and families. Upon returning to the plant site the hurricane crew will do the following:

- Report to the control room and log in.
- Make a plant walk through.
- Meet with the plant management and be briefed on plans, and strength of storm for possible plant shutdown and evacuation.
- Relieve the Operations duty and Maintenance duty personnel.
- Monitor the NOAA weather radio broadcast for an immediate update of storm conditions and predictions. Continue to monitor weather updates throughout the storm.
- The Plant Manager or his/her designee will order the evacuation of all non-essential personnel from the premises no later than 16 hours before landfall.



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## Section 08

**PHASE V**

**HURRICANE DUTY:**
A TROPICAL STORM/ HURRICANE IS EXPECTED TO MAKE LANDFALL IN OUR IMMEDIATE AREA WITHIN THE NEXT 36 HOURS.

**NOTE: IF HURRICANE FORCE WINDS ARE EXPECTED IN EXCESS OF 120 MILES PER HOUR, IT IS THE POLICY OF DEER PARK ENERGY CENTER TO BEGIN A CONTROLLED PLANT SHUTDOWN. STARTING WITHIN 12 HOURS OF THE STORMS PREVAILING WINDS REACHING OUR AREA. REFER TO THE EMERGENCY PLANT SHUTDOWN PROCEDURE IN THIS MANUAL.**

**At 36 hours from landfall, the Hurricane Crew Manager will assume the responsibilities of the plant. He will order the evacuation of all personnel not on the Hurricane Crew. The following task should be completed at this time:**

- The A Operator will make a walk through of the plant to insure its readiness for storm conditions.
- The A Operator will inventory the supplies to insure an ample supply of food, water and other necessities necessary for his crew and make the necessary adjustments.
- The A Operator will do everything within his power to insure the safety of his crew.
- In the event winds in excess of 120 mph. are expected, the A Operator will follow the plant shutdown procedures.
- The A Operator will maintain his crew inside the control room and not allow any venturing outside during the high winds.
- No one person shall venture out into the plant alone, tag teams of two may go out in an emergency with the following equipment; Hard hats with chin straps, safety harness with bung cords of no more than 10 feet in length, rubber boots and gloves, safety glasses with side shields, foul weather gear.
- In the event winds in excess of 120 mph. are expected, upon the safe shutdown of the plant, the Operations Manager will implement plans for the safe evacuation of his crew to a safe building at Shell. Contact number is [redacted]
- If evacuation becomes necessary, the supervisor will notify Deer Park Fire Department (LEPC) of his plans for evacuation.



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**NOTE: CALM CAN BE DECEIVING. DO NOT TRUST THIS CALM WITH YOUR LIFE OR YOU MAY FIND YOURSELF TRAPPED IN THE MIDDLE OF A HURRICANE.**

## Section 09

**PHASE VI**

**POST HURRICANE:**
THAT TIME FOLLOWING THE PASSAGE OF A HURRICANE UNTIL THE PLANT MANAGER ISSUES THE ALL CLEAR.

**Following the passage of the hurricane and the subsidence of possible floodwaters, the following task should be completed:**

- As the storm passage allows, the emergency crew members will tour the plant in order to assess the damage incurred. Pictures should be taken of damage.
- As soon as possible, each employee should contact the plant. A contact number should be given to the supervisor. The employee should inform the supervisor as to their availability to report to work. (Management realizes that areas may be flooded and communication lines may be down for some time.)

**CAUTIONS & SAFETY**

**Following the passage of a hurricane, all individuals that are on the job site or entering the job site must take extreme caution.**
**Some of these cautions are as follows:**

- Due to the possibility of water action and undermining, care must be taken when driving or walking in the plant.
- There could be a possibility of electrical shock due to flooding of cable pits, motor starters and switches. Extreme care must be taken when working near this equipment.
- Pollution of drinking water due to high tides could be possible. Until the city has given the all clear to the potable water system, bottled water only should be consumed.
- There may be items of debris blown partially free or hanging precariously. Broken glass will pose a problem on the ground. Special care must be taken when walking under equipment.



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## Section 10

**DUTIES AND RESPONSIBILITIES**

**Responsibilities during a hurricane emergency will follow normal operating routine. Special responsibilities are listed below.**
**Employees:**

- Report to work as scheduled until such a time that weather conditions make it impractical or management or local law enforcement otherwise advises you.
- After a storm: All employees who have evacuated the area should remain outside of storm damaged area until the all clear is given by the local law enforcement agencies. In some cases it may be necessary to show proof that you live or work in the area to get past roadblocks that may be set up.
- Volunteers for the Emergency Hurricane Crew should have all of their personal and family interests safely secured within 24 hours of a storms threatening landfall.
- Stay in touch with management for scheduling changes.

**Plant Management:**

- Meet and discuss objectives/options.
- Direct all plant activities.
- Initiate all phases of hurricane plan as necessary.
- Release all non-essential personnel when/if appropriate.



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