

Authored By: Mark Garvin	<b>Blanchard Refining Company LLC Galveston Bay Refinery</b>	Doc No.: RSW-000050-GB Rev No: 0
Doc Custodian: EP&R Supervisor		<b>EPR-4 Lightning Precautions</b>
Approved By: Von Meeks		
Date Approved: 9/12/2019	Next Review Date: 10/31/2024	Effective Date: 10/7/2019

## 1.0 Purpose

The purpose of this practice is for worker protection from lightning strikes.

## 2.0 Scope

This procedure applies to all persons working on Galveston Bay Refinery (GBR) property, including contractors and visitors.

## 3.0 Procedure

### 3.1 Roles and Responsibilities

#### 3.1.1 SOC Communications Specialists

3.1.1.1 Receiving lightning alerts and communicating alert/all clear announcements to the site.

#### 3.1.2 Operations Shift Foreman/Supervisor, Maintenance/TAR Coordinators

3.1.2.1 Upon receiving a lightning alert, communicate to the unit/area of responsibility to discontinue any work outside the Protective Space per the per the Lightning Safety Guidance Drawing in Attachment 1.

3.1.2.2 Maintain awareness of weather conditions and determine if jobs are "Essential Work" as outlined in this procedure.

3.1.2.3 Ensure that all stakeholders agree on any confined space entry job that will continue through a lightning alert has proper protection for the confined space attendant and rescue personnel.

#### 3.1.3 MPC Permit Writer/Owner

3.1.3.1 Upon notification of a Lightning Alert, the Owning Department Permit Writer must ensure that all work described in Section 3.3.3 has been stopped, the Safe Work Permits suspended, and personnel seek shelter per Section 3.4. Once the lightning alert is cancelled, the Owning Department Permit Writer must determine if work may resume under the existing Safe Work Permit or whether a new Safe Work Permit will be required to get the work stated again

### 3.2 Lightning Notification

3.2.1 GBR utilizes a weather service provider to alert the site of lightning in the area. The SOC will receive a lightning alert whenever a lightning strike occurs within 6 miles of the refinery.

3.2.2 Upon receipt of a lightning alert, the SOC will alert personnel on all Galveston Bay Refinery (GBR) radio channels that a lightning strike has occurred, and lightning precautions should be implemented.

### 3.3 Lightning Precautions

3.3.1 Work in a Protective Space can continue during a lightning event using the Attachment 1 diagram as guidance. This would include work under Overhead Protection, such as:

3.3.1.1 Work on pumps, compressors, equipment below the fin fan deck,

3.3.1.2 Work on removing a blind from a scaffold that is below the pipe rack,

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- 3.3.1.3 Work on exchangers that is not upper most level,
- 3.3.1.4 Confined space entry work with Overhead Protection for the hole watch and emergency responders,
- 3.3.1.5 Work in an Analyzer Building,
- 3.3.1.6 Loading activities under a covered loading rack, or
- 3.3.1.7 Coke cutting or other activities below the coke derricks provided overhead protection exists.
- 3.3.2 Essential Work that may continue during a Lightning Alert includes:
  - 3.3.2.1 Responding to a process unit upset with potential of PSM consequences,
  - 3.3.2.2 Completing a Hot Tap, stopple job, or clamping job already in progress,
  - 3.3.2.3 Responding to a plant emergency event,
  - 3.3.2.4 Work activities required to safe the unit to prevent imminent PSM consequences,
  - 3.3.2.5 Ground-level movement to or between Protective Shelters (e.g., building to building, building to vehicle), or
  - 3.3.2.6 Evacuation

Any other work activities that may meet the definition of “*Essential Work*” as defined in Section 4.1, may only continue if the Operations Shift Foreman/Supervisor, Maintenance/Turnaround Coordinator, and Safety Supervisor concur that it is Essential Work.
- 3.3.3 Examples of Non-Essential Work that must be terminated during a Lightning Alert include but are not limited to, unless deemed Essential Work per 3.3.2:
  - 3.3.3.1 Any work on the upper most level of a structure without Overhead Protection,
  - 3.3.3.2 Any work on the top level in the pipe rack,
  - 3.3.3.3 Work in open areas with no Overhead Protection,
  - 3.3.3.4 Confined space entry that cannot provide Overhead Protection for the hole watch and emergency responders, including tank entry or work on the roof of a tank,
  - 3.3.3.5 Crane or picker operations (see Section 3.3.4), or
  - 3.3.3.6 Elevated loading activities on the loading racks where no Overhead Protection is provided.
- 3.3.4 All crane work shall be stopped, and the booms be lowered to less than thirty (30) feet above grade when possible. If a Lightning Alert is made during a lift, it is acceptable to continue the lift until the load is in a safe position. Weather should be considered in the pre-lift planning. Operators of cranes and lifts may evacuate the equipment and seek refuge in a Protective Shelter.
- 3.3.5 Ship/barge loading shall be shut down. No ship/barge mooring operation will commence from the time of the initial notification until the “all clear” has been sounded. If mooring operations were in progress at time of alert, the dock supervisor may determine, if weather permits, to continue securing the ship/barge. Dock operations will follow ROG-0300-6062.

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### 3.4 Lightning Protection Sheltering

Upon receiving the communication that lightning has been detected within six (6) miles of the site, all MPC Employees and Contractors performing Non-Essential work per Section 3.3.3 shall secure their job sites immediately and shall take cover in a Protective Shelter.

#### 3.4.1 Take shelter in locations such as:

- 3.4.1.1 Safe locations in process units as defined by Attachment 1.
- 3.4.1.2 Permanent/substantial buildings (metal construction is acceptable if properly grounded),
- 3.4.1.3 Blast trailers
- 3.4.1.4 Tents, if designed for lightning protection and properly grounded,
- 3.4.1.5 Fully enclosed all-metal vehicles, or
- 3.4.1.6 Zone/maintenance shops.

#### 3.4.2 Do Not Take Shelter in the following locations:

- 3.4.2.1 Open areas,
- 3.4.2.2 Close proximity to ungrounded metal objects,
- 3.4.2.3 Inside smoke shacks,
- 3.4.2.4 On rooftops, or
- 3.4.2.5 Temporary non-substantial structures such as tarp or plastic covered structures made of scaffold poles designed to protect workers from rain, temperature extremes or wind but not lightning. (e.g., "hooches")

### 3.5 Lightning Alert All-Clear

- 3.5.1 The SOC will be notified of a lightning alert all-clear by the weather service provider whenever no lightning strikes are detected for 30 minutes within 6 miles of the refinery.
- 3.5.2 The SOC will notify the site via all GBR radios that the lightning alert has ended, and personnel may resume normal activities. Be aware that additional lightning alerts could occur shortly after receiving an all-clear.

## 4.0 **Definitions**

### 4.1 **Essential Work**

- 4.1.1 Activities that must occur to prevent an **imminent** process safety event
- 4.1.2 Critical maintenance/turnaround work already in progress that poses a greater personal safety or process safety risk by terminating, or
- 4.1.3 Critical plant functions already in progress that pose a greater personal safety or process safety risk by terminating.

4.2 **Lightning Alert** – Lightning has been detected within 6 miles of the refinery and the SOC has communicated that Lightning Precautions should be taken.

4.3 **Lightning Alert All-Clear** – Lightning has not been detected with 6 miles of refinery for the last 30 minutes and the SOC has communicated the all-clear.

4.4 **Non-Essential Work** - Non-Essential Work is any work without Overhead Protection that can be delayed without creating the hazard of an imminent personnel or process safety event.

4.5 **Overhead Protection** - Overhead Protection is any fixed structure, including Coker derricks, with

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adequate grounding.

- 4.6 **Protective Shelter** - Protective Shelter is any substantial structure such as a zone/maintenance shop, operator's shelter, blast shack, work trailer or fully enclosed metal vehicles (windows closed).
- 4.7 **Protective Space** - Protective Space is any Protective Shelter or location with adequate Overhead Protection to provide protection from lightning.

## 5.0 References

- 5.1 Refinery Docks ROG-0300-6062 Severe or Unusual Marine Weather Conditions
- 5.2 RSP -1706-000 Lightning Safety

## 6.0 Attachments

- 6.1 Attachment 1: Lightning Safety Guidance Drawing

## 7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original issue. New integrated site procedure replaces GBR-HESS-EPR-04 and RSW-0060-TC and updated to align with RSP 1706-000 (including Lightning Safety Guidance Drawing) under MOC 64987.	M. T. Garvin	V. J. Meeks	9/12/2019	10/7/2019

### Attachment 1: Lightning Safety Guidance Drawing

The following drawings are provided as guidance for approved work during a lightning alert. Sites should develop site specific drawing or plot plans of safe locations based on this appendix.

<b>X</b>	Work that shall be stopped in a Lightning Alert if not deemed Essential Work.
<b>R</b>	<ul style="list-style-type: none"> <li>Review for adequate Overhead Protection for hole watch and emergency responders for confined space to continue.</li> <li>Review equipment manufacture requirements necessary before</li> </ul>
<b>OK</b>	Work allowed to continue in a Lightning Alert.

**Note:** Overhead Protection for confined space attendant and emergency responders shall be confirmed if work is allowed within a confined space during a lightning alert.

