



**2600SEG106**  
**SAFETY STANDARD FOR WORKS UNDER ELECTRICAL ATMOSPHERIC ACTIVITY**  
**(THUNDERSTORMS)**

**1.0 PURPOSE**

To establish a procedure to be followed when potentially exposed to thunderstorms.

**2.0 BACKGROUND INFORMATION**

Some units of the Panama Canal Authority (ACP) have procedures cases of potential exposure to thunderstorms. This standard replaces all of those procedures.

**3.0 SCOPE**

This standard applies to all ACP employees, contractors and third parties performing works in facilities under ACP jurisdiction that, due to their impact on the operations, or due to their special conditions, must be performed continuously and require exceptional amounts of personnel or machinery.

**4.0 LEGAL FOUNDATION**

This standard is based on Agreement No.12 of ACP Board of Directors, Risk Control and Occupational Health Regulations, Chapter 1, Article 3.

**5.0 DEFINITIONS**

For the purpose of this Standard, the following definitions apply:

**5.1** Lightning: A greatly intense electric spark produced by a discharge between two clouds or between a cloud and the ground.

**5.2** Storm: Violent atmospheric disturbance accompanied with thunder and lightning, and strong winds, rain or hail.

**5.3** Continuous works: Works performed in facilities under ACP jurisdiction which, due to their impact on operations or due to their special conditions, must be developed continuously and require exceptional amounts of personnel and machinery.

**6.0 GENERAL**

**6.1 Observation during continuous works**

**6.1.1.** The weather must constantly be observed while performing continuous works, through the use of detectors and / or using ACP'S radar, which is available through the intranet, as an auxiliary element, to detect any sign of storm or electrical atmospheric activity so as to try to minimize the probabilities of an incident.

**6.1.2.** Whenever storm activity is detected within an 8-mile or less distance from the area where continuous works are performed, there is immediate danger.

**6.1.3.** Storm detecting electronic devices must be available and measures must be taken to protect the personnel when conducting repair works at the locks, replacing railings on locks walls, handling explosives, working in the towers, and conducting scuba diving operations. These devices must be calibrated or adjusted according to manufacturer specifications.



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**6.1.4.** Storm detection electronic devices must, as a minimum, have two detection ranges: from 8 to 20 miles, and from 3 to 8 miles; and have visual and audio approximation alarms.

**6.1.4.1.** Devices must constantly be observed.

**6.1.4.2.** Devices must be kept at the widest range.

**6.1.4.3.** When alarms are activated, devices must be changed to the narrowest range and watched constantly. Should the electrical atmospheric activity increase in the narrowest range, activities must be suspended.

**6.1.4.4.** These devices indicate how the storm develops. However, storms are dangerous weather phenomena that may change their course or behavior suddenly and unexpectedly. A storm might even develop directly over the site, which would not offer any prior advise even when using these devices.

**6.2** Suspending activities.

**6.2.1** Works must be suspended when:

**6.2.1.1** The alarms of devices in the lower range activate constantly, or

**6.2.1.2** The time between the flash of the lightning and the thunder is less than 45 seconds, or

**6.2.1.3** The supervisor in charge or operations reasonably deems that there is risk of lightning strikes based on present atmospheric conditions.

**6.2.2** Works may be reinitiated when:

**6.2.2.1** 30 minutes after the last lightning or thunder registered in the lower range, or

**6.2.2.2** Constant and continuous monitoring of the storm gives strong indications that the storm has moved to an over-8-mile range or the interval between the lightning flash and the thunder is over 45 seconds long.

**6.2.3** The suspension or reactivation of activities shall be notified through the supervisor in charge of operations.

**6.3 Injury cases**

**6.3.2** Individuals injured by lightning have no electrical charge and may be assisted safely. Apply the First Aid procedures if you are qualified to do so.

**6.3.3** Call 119 or seek medical assistance immediately. If you are at the locks, call number "0" (zero).

**6.4 Forbidden works during electrical atmospheric activity at the work place**

**6.4.1** Activities involving explosives.



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6.4.2 Scuba diving operations.

6.4.3 Crane operations.

6.4.4 Electric welding works in exterior areas.

6.4.5 Works on communication antennas and towers located in open areas.

### **7.0 Training and Updating Requirements:**

7.1 All employees whose work entails potential exposure to electrical atmospheric activity must receive the appropriate orientation.

7.2 Said orientation shall be coordinated with the Industrial and Safety Training Unit (RHSI).

### **8.0 RESPONSIBILITIES**

8.1 The supervisor in charge of continuous works shall be responsible for:

8.1.1 Observing or seeing that atmospheric conditions are observed, as well as the operation of electrical atmospheric activity detection devices.

8.1.2 Suspending works when the atmospheric conditions or detection devices so indicate.

8.1.3 Suspending works when the safety and occupational health specialist so advises.

8.1.4 Reinitiating works when the atmospheric conditions improve.

8.2 Workers shall be responsible for:

8.2.1 Following supervisors' instructions to suspend all activities.

8.2.2 Notifying their supervisor when they detect atmospheric conditions that anticipate an imminent storm.

8.2.3 Seeking shelter and following the instructions provided for in APPENDIX B hereof.

8.3 Safety and Occupational Health Specialists shall be responsible for:

8.3.1 Assisting the supervisors in charge of continuous works with the mechanisms that shall be established to continuously observe atmospheric conditions.

8.3.2 When applicable, coordinating with supervisors in charge of continuous works to discontinue such works (those works where a safety and occupational health specialist has been permanently assigned to participate in a permanent condition).

### **9.0 INQUIRIES**

Any information or clarification of the content or application of this Standard must be requested in writing to the Safety and Industrial Hygiene Unit (RHSH).



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**10.0 EXCEPTIONS**

Any requests for changes or temporary exceptions to this Standard must be made in writing to the Safety and Industrial Hygiene Unit (RHSH).

**11.0 TERM**

This Standard shall remain in force until amended or revised.

**12.0 REFERENCES.**

**12.1** National Lightning Safety Institute, Louisville, CO.

**12.2** Safety Manual, Locks Division, ACP.