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ADVISORY NOTICE

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ELECTRICAL STORMS AND LIGHTNING
RECOMMENDATIONS FOR EARTHMOVING MACHINERY

Lightning produced by electrical storms can be an unpredictable and violent event. As such, those exposed should exercise caution and work towards minimising risk exposure as far as is practicable.

CMEIG's general recommendations for personnel in and around earth moving equipment during an electrical storm are dependent on the person's location with respect to the machine.

For personnel in the operator station of a machine
Personnel already in an enclosed ROPS (Roll-over Protective Structure) operator station when an electrical storm occurs, should remain there unless it is unsafe to do so (e.g. it may not be safe to remain in the operator station if there is a risk of tire explosion).

For personnel on the ground near the machine
Personnel should not mount and dismount the machine, and should stay away from the vicinity of the machine to ensure that lightning does not leap from the machine to that person.

For personnel on the machine but not in the operator station
Personnel should preferably seek shelter away from the vicinity of the machine, or within the enclosed ROPS operator station if the former is not possible. Service and maintenance activities exposed to the electrical storm (e.g. activities conducted outdoors during, or just prior to an electrical storm) should be avoided.

Where practicable, **rubber tires on earthmoving machinery should be filled with dry nitrogen** to mitigate the risk of tire explosions due to pyrolysis.

Where a machine has been struck by lightning, the machine should be inspected (once it is safe to do so) for correct operation prior to returning it to service.

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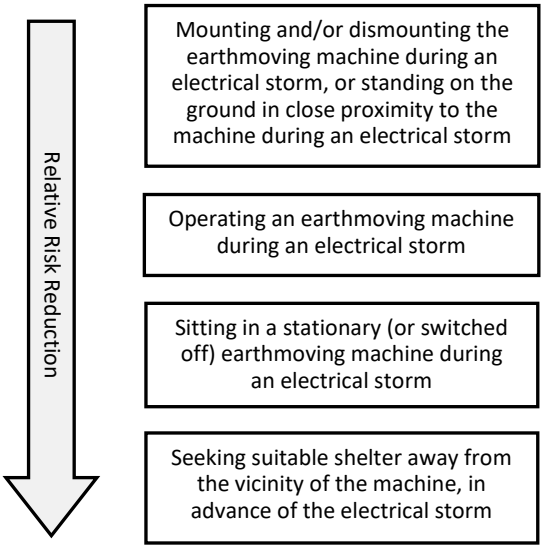
Operating earthmoving equipment during an electrical storm

There are currently no internationally recognized standards to design to, or validate safe operation of earthmoving machinery during electrical storms, or to quantify the risk exposure.

The metal structure of earthmoving machinery and their fully enclosed ROPS operator stations (where fitted), may inherently provide some protection from electrocution in the event of a lightning strike though it should not be assumed that such structures are Faraday Cages. Fail-safe braking systems (where fitted) may also assist in maintaining an ability to stop a moving machine in the event of lightning-induced machine events/malfunctions.

However, lightning produced by electrical storms can have unpredictable and violent effects. Therefore, to the extent practical, the lowest risk action is for personnel to seek suitable shelter away from the vicinity of the machine in advance of an electrical storm, and until the electrical storm passes. The diagram below articulates this relative risk visually (Note, not all potential situations are shown in the illustration. The illustration is also not intended to allude to an acceptable level of risk).



Noting that a site may have additional risk mitigation measures (by way of example, a couple of these may be autonomous or remote-control operations) and/or specific risk acceptance criteria, CMEIG recommends that site managers develop their own site operational policies regarding whether/how to operate earthmoving equipment in electrical storms.

For more information, contact your product manufacturer, supplier or authorised agent.