



Safety Alert

From the International Association of Drilling Contractors

ALERT 98-22

Lightning Protection

WHAT HAPPENED:

Lightning struck a drilling rig, causing a failure of the electronic Pit Volume Totalizer (PVT) system. One mud pump was knocked offline, and the SCR suffered minor damage. Several minutes later, the rig took a kick. The crew eventually brought the kick under control. The incident prompted the contractor to evaluate methods for ensuring that rigs are properly grounded to hopefully avoid a similar incident in the future.

CORRECTIVE ACTION:

Grounding should be accomplished by the use of cable and driven electrodes. The derrick (mast), substructure, metal buildings, stationary electrical equipment, fuel storage tanks, metal fences, metal containers and any other structures around the rig where electric power is or may be should be properly grounded.

The contractor recommended the following methods of grounding:

1. By use of full-size ground conductor
2. The use of bare copper conductor or braided wire, sized not less than 2/0 AWG, connected between all electric motors to the building or skid. All buildings or skids should be interconnected with the same size conductor.
3. An earth rod will be driven as close as possible to low wet areas to achieve desired grounding. Rods should be at least eight feet (2.4 meters) long and 3/4" (1.9 cm) in diameter. Outer surface of rods should be either galvanized or copper coated.
4. If rock is encountered, the rod should be driven at an angle not to exceed 45 degrees from vertical or should be buried in a trench that is at least 30 inches (76.2 cm) deep. Fill trench with a 3/32" (2mm) layer of salt. Backfill with native earth.
5. Earth substructure to conductor in order to achieve desired grounding.
6. Bond all skids and auxiliary equipment together to form a "loop" type system, wherever possible, so that the continuity of the grounding circuit will be maintained even if one conductor is severed.
7. Grounding connections on skids should be rust-proof (stainless steel bolts are recommended).

The Corrective Actions stated in this alert are one company's attempts to address the incident, and do not necessarily reflect the position of IADC or the IADC HSE Committee.

This material is presented for information purposes only. Managers & Supervisors should evaluate this information to determine if it can be applied to their own situations and practices

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