



Drilling Rig Rollover Incidents – Courtesy of Geokinetics & IAGC

CAGC SAFETY ALERT

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Safety Alert

01-10

INCIDENT DATE:

Various / Daytime; all occurred during the movement of equipment to the next shot point.

INCIDENT LOCATION:

North America

DESCRIPTION OF THE INCIDENT:

Since the beginning of 2010 there have been four separate incidents at three different crew locations involving drill rigs that have tipped over while being moved from one shot point to the next. All of the events are strikingly similar in nature so they are being addressed in one safety alert.

In each case the drill rigs were operating on uneven (hillside) terrain and in winter conditions (ice and snow). The rigs began to slide and tipped over when they hit an embankment, ditch, ravine or other obstacle.

In each incident the operator followed company procedure by assessing the area before proceeding forward; in each situation the operator had determined it was OK to continue.

During one of these incidents the operator “bailed out” of the drill rig as it was sliding causing this particular incident to be classified as a High Potential Incident (HiPo).

The operations being conducted were supported with either cats or winches but were unavailable or unused at the moment of the event.

INCIDENT ANALYSIS BASED ON TOPSET:

(Timeline, Organization, People, Similar events, Environment and Technology)

T - Drills were moving to new drilling locations;

O - Faults in scouting ahead and placement of shot points in rough terrain;

P - Faults in the decisions made by operators to continue, sometimes even after checking the situation;

S - Drilling and equipment roll over events have occurred in industry. Fatalities have occurred when operators are either thrown from or jumped from equipment. In 2001 a fatality occurred when a cable buggy rolled over on a hill & a passenger was thrown and crushed;

E - Terrain (hillside) and obstacles, 3 cases involved forested areas. Weather conditions: cold, ice and snow cover creating slippery areas and indistinct obstacles;

T – Tracked drill rigs are normally suited to this type of terrain, however it was determined that the rigs were being used beyond the limits of their design capabilities.

What has changed? Projects are beginning in winter conditions causing unfamiliarity with slope, ice and snow hazards.

OUTCOME:

Each of the incidents occurred at slow speed meaning a relatively low risk for tip or roll -over to occur in the field; however it is the frequency of occurrence that has elevated the risk as tip and roll-overs of large seismic equipment in the field have previously been the cause of fatalities within the seismic industry - particularly if personnel come out of the vehicle during the roll-over event.

The drill masts were up in two of the four incidents; this was, admittedly, bad industry practice and contrary to company procedures, never-the-less, due to the overall weight distribution of the rigs, this likely DID NOT contribute to the rollover event.

There were no significant environmental impacts stemming from these incidents as only minor oil spills occurred (<1/2 gallon). These spills were cleaned up immediately and very minor surface damage was reported post incident.

No significant equipment damage occurred in any of the four incidents and the drill rigs went back to work once the equipment was retrieved and mechanically inspected.

There were no injuries suffered in any of the four incidents.

Drill rigs are sometimes operated in terrain and conditions that are close to their maximum operational capabilities; it is because of this that we are checking into the availability & viability of some form of ice cleats to improve traction of rubber tracked units in these conditions.

RECOMMENDATIONS:

- All drilling operations hold safety meetings prior to job start up to discuss these incidents and consider site specific actions for prevention of further incidents;
- All personnel must wear seatbelts at all times when operating tracked, truck or buggy drilling equipment. These are important to keep the personnel INSIDE the cab if a roll-over occurs. DO NOT JUMP from vehicles
- In rough terrain, consider giving drillers some leeway in the placement of drill points so they have an opportunity to use a less hazardous access and drilling position for the rig;
- Hazard awareness in conditions of snow cover must be stressed. Snow covers and obscures obstacles such as logs and ravines making it difficult to see the true nature of a hazard or obstacle;
- In rough areas a spotter should be used to check the route immediately ahead and to assist the operator in maneuvering. The driller in charge should also investigate and approve the activity;
- With item #5 in mind, and given that in these incidents the operators did check before they continued, it is clear that better diligence and care in hazard recognition and decision making is needed;
- The drill rigs and field support equipment should be equipped with slope gauges inside the cab, in view of the driver. Some units were equipped with these but it must be realized that slippery conditions will change handling characteristics;
- Winches and Cat towing support should be used to stabilize and hold the rigs if an obstacle or slope cannot be avoided. The equipment should be available, routinely checked and maintained, and personnel must be trained in its proper use.