



Mines Safety

Significant Incident Report No. 145

Driller's offsider struck by dust deflector box or "wear bend"

Incident

A driller's offsider was fatally injured when he was struck by a "wear bend" that became detached from the cyclone at an exploration drilling site. The wear bend is a steel attachment built for connecting the sample hose to the cyclone. It is reinforced with thick metal blocks to withstand the abrasive nature of the drill cuttings on the return side of the reverse circulation (RC) drilling process. The wear bend weighed about 40 kg.

The wear bend assembly broke away from the welded flange on the cyclone as the driller was attempting to clear a blockage in the sample hose by using high pressure compressed air. The driller's offsider was standing next to the sample hose. He was struck by the wear bend and sample hose, and suffered fatal head and other injuries.

Causes and contributing factors

- High pressure compressed air was used in an attempt to clear the blockage.
- Employees were not standing clear of the sample hose while the driller was attempting to unblock the sample hose.
- The wear bend became detached from the cyclone as an insufficient number of bolts and nuts was installed.
- The bolts and nuts used to attach the wear bend to the cyclone were too small for the intended application and were pulled through the bolt holes on the cyclone.
- There were no safe working procedures for unblocking a sample hose and for installing a wear bend.
- The safety devices for securing the wear bend to the cyclone in case of a failure of the bolts and nuts were not connected at the time of the accident.
- There was no proper engineering design for the wear bend if subjected to high pressure compressed air during the drilling process.

Recommendations

- A properly engineered design process must be undertaken for all components subjected to high pressures and forces during the RC drilling and sampling process. Approved fabrication drawings should be provided to the persons carrying out the fabrication work and the work should be checked to ensure it complies with the design.

- Safe work procedures must be developed for activities associated with the drilling operation. The use of inspection reports and incident reports, backed up by a detailed maintenance system, are valuable tools to identify hazards in component design and operation.
- Equipment inspections using checklists must be carried out at least daily and signed off by an appointed supervisor. Defects identified must be acted upon in a timely fashion. Follow up checks should also be made to ensure that the work is carried out without exposing employees to hazards.
- In developing safe work procedures, particular attention should be paid to actions recommended in the following Mines Safety Significant Incident Reports:
 - No. 3 *Compressed air hose connection – fatal accident*, issued 29 September 1989;
 - No. 92 *R C drill rig 3" sample hose connection – serious accident*, issued 23 February 1998;
 - No. 109 *Fitting of tile boxes on drilling rigs*, issued on 9 October, 2001; and
 - No. 119 *Driller's offsider blasted with sample dust under pressure*, issued on 4 November 2002.



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