

Safety Alert

Mines Inspectorate

Safety Alert No. 260
7 April 2011

Failure of explosion protection on underground diesel engine systems

Mine type: Coal mine — underground

Incident: Recently, a diesel-powered coal hauler that had undergone raw gas tests the week before was found with a ¼ inch BSP plug missing from the water-cooled exhaust pipe. (This plug is routinely removed to enable raw gas testing.)

Equipment: All underground coal mine diesel transport equipment

Hazard:

- Diesel engine exhaust gases were able to enter the underground coal mine atmosphere in an 'unconditioned' state (i.e. they had not gone through an exhaust conditioner, often called an exhaust scrubber, to render them safe).
- The explosion-protection properties of the engine were diminished while it was in an Explosion Risk Zone 1 (ERZ1) — a highly dangerous situation.

Cause: This machine had undergone a series of raw gas tests in the preceding week. The test port plug may have been insufficiently secured after testing or may have been, inadvertently, overlooked.

Comments:

- The Queensland Mines Inspectorate has become aware of instances where the integrity of the explosion-protection properties of diesel engine systems used in underground coal mines has been compromised.
- In this incident, it is highly probable that a machine had been operating within an ERZ1 without a test port plug, which means that exhaust gases would have been exiting the engine directly into the mine atmosphere.

Recommendations:

1. That all underground coal mines review procedures associated with maintaining and testing explosion-protected diesel engine systems.
2. That the original manufacturer of the equipment be included in the review in order to investigate possible engineering solutions.
3. That, in the interim, site senior executives audit their site's underground diesel fleet to ensure correct fitting of induction and exhaust systems and associated hardware.

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