



Mines Safety Significant Incident Report No. 174

Mechanical scaling ignites flammable gas underground

Summary of incident

An open-cabin jumbo drill was mechanically scaling a development heading at an underground gold mine. Sparks from the scaling process ignited a flammable gas mixture that had accumulated in the backs of the drive. Flames reportedly lasted for seven seconds and extended towards the cabin. There were no injuries or equipment damage.

Probable causes

Direct

- The rockmass contained pockets of flammable gases, mainly methane and hydrogen, which were released into the drive when development intersected a gas pocket. These gases are light and collected in the backs of the drive.
- It appears that, during scaling activities, friction between the drill bit and rock material created a spark, which ignited the flammable gas mixture.

Contributory

- The ventilation at the face was inadequate. Air flow would have been very low, and so the gas released from the rockmass could not be diluted or flushed.
- Ventilation and monitoring procedures were not followed.
- A gas monitor in the jumbo cabin failed to detect the gas in the backs of the drive. Fresh air from ventilation ducting may have reduced the effectiveness of the gas detector.
- The risk management plan was inadequate for all potential exposures to strata gas (e.g. diamond drilling, production drilling, and development activities).

Action required

When designing work plans, companies should assess the potential for intersecting gas-bearing strata (e.g. using geological and hydrological data), determine the risks and, where necessary, develop a strata-gas management plan. This should include procedures for monitoring and managing hazardous gases.

All workers who may be exposed to strata-gas hazards should receive adequate information, instruction and training regarding those hazards.

Further information

Visit the publication section of the Resources Safety website at www.dmp.wa.gov.au/ResourcesSafety for the following safety alerts.

[Mines Safety Bulletin No. 27 Diamond drillers intersecting hazardous gases](#)

[Mines Safety Bulletin No. 74 Explosive gases associated with mining](#)

[Mines Safety Significant Incident Report No. 85 *Explosion of flammable gas in underground stope void*](#)

[Mines Safety Significant Incident Report No. 102 *Fatal methane gas explosion - South Africa*](#)

A handwritten signature in black ink, appearing to read 'S. Ridge'.

Simon Ridge

STATE MINING ENGINEER

14 February 2012