

Mine/Quarry Name	File #	Operator	Activity Type	Region	Activity Date
				Central	22/06/2005

Vision: Our Industries Free of Safety and Health Incidents

Mine Record Entry

This report forms part of the Mine Record under s68 of the Coal Mining Safety and Health Act 1999. It must be placed in the Mine Record and displayed on Safety Notice Boards.

To mine Site Senior Executive: Directive to Reduce Risk - Section 166 Coal Mining Safety and Health Act 1999

Possible Risk associated with Running Explosion Protected Compression Ignition Engines In ERZ1 Areas Of An Underground Coal Mine

As an inspector appointed under *section 125 –Appointments-* of the *Coal Mining safety and Health Act 1999* (the Act) I reasonably believe that the risk from operating a compression ignition type engine (diesel engine) of current design in an underground mine or part of an underground mine that is an ERZ1 may reach an unacceptable level of risk.

Background and reasons for the Directive

In another jurisdiction a vehicle powered by an explosion protected diesel engine was operated in an atmosphere containing approximately 8% methane in an underground coalmine. Investigators concluded that the automatic shut down failed to operate due to the sudden increase in methane content in the atmosphere surrounding the vehicle. The vehicle operator was unable to shut the engine down once the high level of methane had been drawn into the engine and the engine could only be stopped when the vehicle was driven into fresh air.

The risk of diesel engine powered plant in underground coalmines initiating a methane explosion is controlled by three barriers:

1. The requirement that all engines operating in those parts of the mine designated ERZ1 must be explosion protected.
2. An engineered ventilation system that prevents methane reaching explosive levels in the mine atmosphere in parts of the mine where equipment operates.
3. The requirement that diesel engines in plant that operate in ERZ1 areas shut down automatically when surrounding methane concentration reaches a prescribed levels or (in some circumstances) the operator has a hand held methane detector and manually shuts down the engine at a prescribed methane concentration.

In the situation in question two of these barriers had failed and it was the conclusion of the investigators that a methane explosion was prevented by the fact that the diesel engine was of an explosion protected type.

E-mails with attachments dated 23 June 2005 sent to site senior executives of underground coalmines provided further details of the event that has formed the basis of my reasonable belief.

As a result of my reasonable belief under my powers established under *section 166 Directive to reduce risk* of the Act I issue you with a directive to take the following corrective actions to prevent risk from reaching an unacceptable level.

1. Develop a system in consultation with equipment manufacturers to, manually shutdown all diesel plant operating in an ERZ1 in a methane rich environment.
2. Determine by risk assessment whether this system should be extended to diesel vehicles that operate in a NRZ
3. Establish that all operators of diesel-powered plant that operates in ERZ1 areas (depending on out comes of the risk assessment also NRZ areas) are competent in the use of the emergency shutdown system and the manual diesel fuel shutoff valve.
4. Establish a programme to install an engineered emergency shutdown system on all explosion protected diesel engine used at your mine and implement the programme.

You are required to submit your programs for the installation of emergency shut downs systems on explosion protected diesel engines to your local inspector by close of business by August 1st 2005.

Production or display of identity card

In accordance with section 124 of the Act I will produce my identity card for your inspection at the first reasonable opportunity.

A handwritten signature in dark ink, appearing to read 'D Mackie', with a horizontal line drawn underneath it.

David Mackie
Inspector of Mines
Southern Region