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Light vehicle motion control

This safety bulletin provides safety advice for the NSW mining industry.

Issue

The Resource Regulator recently became aware that light vehicle operators have been disabling design features such as anti-lock braking systems (ABS). Light vehicles that are required to travel on and off roads depend on these design features to assist drivers with vehicle motion control.

When driving on mine roads that may have a loose top surface additional care is required, particularly if the road has been watered for dust control or affected by rain.

Engineered systems such as ABS provide a high level of safety enhancement when a vehicle is operated on a typical road surface, sealed or unsealed and should not be disabled.

Circumstances

Under some off-road conditions, the braking distance may be increased by an ABS control system. In most circumstances, the ABS will provide improved braking while maintaining the ability to steer.

Investigation

An ABS braking system is a safety critical function that is designed to maintain rolling friction. Rolling friction allows a vehicle to track or steer with input from the driver. Where brake effort exceeds the friction of rolling friction the vehicle will skid. A static skidding wheel cannot track or be steered and will follow the trajectory of the vehicle at the time when rolling friction is lost.

Grading the surface of mine roads is critical for traction and control of light and heavy vehicles. The grading process is required to remove the fluid layer of loose material from the road surface to expose the more stable material or earth below. Grading will improve the road surface condition to provide better vehicle traction. Attention to road surface condition is required on gradients, corners and stopping zones.

Tyre selection is a critical factor for vehicle safety. Floatation of a vehicle is determined by the tyre design, width and inflation pressure. Typically, a narrower tyre has better penetration to the road bed in an off-road application where a fluid top surface can affect the stopping distance of ABS vehicles.

Recommendations

The following recommendations are made to mine operators:

1. Engineered systems such as ABS provide a high level of safety enhancement when a vehicle is operated on a typical road surface, sealed or unsealed and should not be disabled
2. Evaluate and understand the performance of light vehicle brake systems in the application specific to your mine. This should include performance of the braking system on difficult surfaces such as a watered road with a fluid top layer.
3. As part of the brake performance evaluation, tyre selection should be considered.
4. Review roadway maintenance at your mine to ensure that the surface grading is suitable and matched to the traffic load.
5. Understand vehicle braking performance and select and observe suitable speed zones.
6. Training for operators of light vehicles should include education specific to the conditions that may be encountered at your mine. An understanding of stopping performance of light vehicles on gradients and wet mine roads will assist operators to control a vehicle within the capability of the vehicle design.

NOTE: Please ensure all relevant people in your organisation receive a copy of this safety bulletin, and are informed of its content and recommendations. This safety bulletin should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

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