



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Electrical Engineering Safety

Decision Sheet 4.2

Electrical Safeguards for Electrical and Non-electrical Hazards

Shuttlecar Cable Reel “Overfull” Protection

A basis for consistent application of Electrical Engineering Safety issues across NSW

Decision Sheets are developed by the Inspectors of Electrical Engineering in response to issues raised or questions asked by others in the DPI, in particular Mine Safety Operations and from our external clients. They are for use by any staff in Mine Safety Operations, but primarily by Electrical Engineering staff. They can be distributed externally to the DPI.

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Preamble

Electrical safeguards are often termed interlocks or trip systems. They are used as a risk control to protect workers when other risk controls have failed. It is important that these safeguards have a high degree of reliability. The higher the risk, the higher the reliability needs to be. This reliability is known in contemporary terminology as Safety Integrity and the higher the Safety Integrity Level, the more reliable the safeguard.

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NO LIVE LINE WORK
TEST BEFORE YOU TOUCH



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Electrical Safeguards for Electrical and Non-electrical Hazards - Shuttlecar Cable Reel

“Overfull” Protection

Issue

In February 1999, the Chief Inspector of Coal Mines issued a notice varying the approval of mobile plant in relation to shuttle cars fitted with cable reeling systems. The notice was as a result of an unacceptable number of incidents of cable reels becoming overfull and causing cable damage which resulted in arcing in a hazardous zone. In the presence of an explosive mixture of methane and air, this arcing would cause an explosion. The notice required – “ a positive device such as a limit switch or equivalent device which prevents any part of the cable rotated by the cable reel reaching a diameter at which the cable can catch or jam on any item or fixture around the cable reel, including the hair pin guide, floor or sides of the reeling compartment. The above mentioned device shall:

- a) Automatically cause the shuttle car to stop and apply the brakes.
- b) Be part of a control circuit so arranged that the re setting of the device does not automatically restart the shuttle car.

Position

Shuttle cars with cable reels shall have an electrical safeguard that detects cable reel overfull and automatically removes power to the shuttle car traction motors (or equivalent), automatically applies the brakes and DOES NOT adversely impact on the ability to steer the shuttlecar. This electrical safeguard shall have an appropriate safety integrity level.

