

SAFETY ALERT



FAILURE OF PINS ON BULK COAL WINDER

INCIDENT

After a new winding cycle had been initiated on a bulk coal winder, a flask door was found to be still sitting over the surge bin chute.

CIRCUMSTANCES

A bulk coal multi-rope friction winder flask had emptied and was starting a new wind cycle when the winder shut down unexpectedly. The flask had lowered approximately 70 percent through the scroll in automatic mode. The winder's primary trip was due to regulator malfunction and, in addition, a secondary trip of the chute overfull limit occurred.

INVESTIGATION

The investigation found that the coal flask door was sitting over the surge bin chute.

The door was still attached to the bottom transom of the 'Bridle' by the two toggle links.

The two flask door hinge pins were broken away.

Detailed visual examination revealed that the right hand hinge pin had failed previously and the left hand hinge pin had apparently given way at the time of the incident.

This allowed the flask door to remain partially open after dumping coal, resulting in protective limits shutting down the winder.

As a consequence the second means of egress was not available for 36 hours.

The hinge pins were ten years old and their replacement had been planned to be carried out during a shutdown due two weeks after the incident, in accordance with their duty cycle expectations.

The causes of the pin failures were identified as being a result of reversed bending fatigue cracking at the 1mm radius at a critical change of section, combined with suggestions of a poor heat treatment process.

RECOMMENDATION

All mines with bulk coal winders should investigate the potential for similar failures at their sites, paying particular attention to issues associated with design and quality of materials as well as adequacy of inspection and testing procedures.

Consideration should be given to regular in situ ultrasonic testing of pins and other critical components that are unable to readily removed for routine crack detection examination.

SIGNED OFF

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