

SAFETY ALERT



LONGWALL SUPPORT CYLINDER LEG FAILURE

Dangerously high hydraulic pressure on a longwall roof support leg caused a hydraulic cylinder to split. No one was hurt but the incident could have caused a death.

CIRCUMSTANCES

The operator was operating a four leg longwall roof support and noticed oil leaking from the leg cylinder. The longwall fitter found the cylinder was split length-wise allowing oil to escape from the cylinder. The longwall had recently been commissioned after being relocated.

INVESTIGATION

The return line was blocked causing the pressure to build up in the hydraulic cylinder. The blockage was due to a failure of an internal check valve in the control block which caused the second stage leg of the cylinder to split and release oil.

The bursting disc (520 Bar pressure relief valve) was installed and operated. However this did not protect the hydraulic cylinder, and very high-pressure hydraulic fluid discharged.

RECOMMENDATIONS

All longwall mines and longwall equipment suppliers should:

1. Carry out a risk review on hydraulic circuits for failure modes that may block the return line of the cylinder causing pressure to build up.
2. Review existing maintenance systems to evaluate the outcome of the risk review. Check to ensure hydraulic safety is maintained.
3. Obtain from the original equipment manufacturer, the maximum pressure the hydraulic cylinder can withstand before starting to yield.
4. Have high pressure protection for cylinders by either using a burst disc or a relief valve. Correctly rate and set relief valves.
5. Review procedures for installation, commissioning and removal of hydraulic cylinders used in longwall roof support.

For further information contact:

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A handwritten signature in black ink, appearing to be 'R. Regan'.

R. Regan
ASSISTANT DIRECTOR SAFETY OPERATIONS