



SAFETY ALERT

Structural failure and collapse of drill rig mast

INCIDENT:

The mast on an open cut blast hole drill rig collapsed suddenly when the operator attempted to lower the mast before moving the drill rig off the drill bench.

CIRCUMSTANCES:

The operator was attempting to lower the mast on a single pass over-burden drill rig before tramping off the bench and up the access ramp. The operator had unlocked the mast locking pins and was lowering the mast when the lower pivot points on the mast failed, causing it to collapse. The drill sustained substantial damage but there were no recorded injuries.

INVESTIGATION:

An onsite inspection concluded that the mast pivot points had failed where the bearing blocks were welded onto two RHS (rectangular hollow support) vertical supports. Further visual inspection of the drill rig identified additional cracking at the base of the bearing block support steel work.



The collapsed drill rig mast (left) and the drill rig's failed pivot point (right) on the RHS tubing.

RECOMMENDATIONS:

1. Include, as part of the operator's pre-operational checks, a visual inspection of the mast pivot points, pivot shaft and supporting structure for any visual signs of cracking or component failure.
2. Include more detailed visual inspections on all critical elements as part of all periodic maintenance checks.
3. Consult with the plant original equipment manufacturer (OEM) about the frequency of non-destructive testing (NDT) of all critical structural elements to include, but not be limited to, mast pivot points, pivot shafts, locking devices and supporting structures.
4. A copy of all current NDT reports should accompany the plant for review upon request by the operator of the mine before the machine is put into service.
5. Develop 'exclusion zones' around the plant whenever the mast is being raised or lowered before tramming or servicing.
6. Consult with the plant OEM to ensure the mast pivot points, pivot shaft and supporting structure are of the latest design. Should the plant require modification, this should be carried out in consultation with the plant OEM.
7. Where modifications have been made, or are required to be made, ensure design changes are assessed by the plant OEM or a suitably qualified person.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert 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.

Signed



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MINE SAFETY OPERATIONS BRANCH
NSW DEPARTMENT OF PRIMARY INDUSTRIES

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