

Safety Alert

Stabiliser ram failure & tower collapse - Madill 172



Photo 1: Tower rearward collapse



Photo 2: Thread separation on stabiliser ram

Overview

While repositioning the hauler, the stabilizer ram failed resulting in the pole collapsing backwards.

Sequence of Events

The hauler (Madill 172 - tracked) was being turned on the same landing for the next setting. Guy ropes had been slackened (not connected to stumps) and had big bellies. The tower was positioned at 70ft. The main rope was connected to an Acme carriage with the clamps on. The carriage was located in front of the hauler and no other working ropes were connected at the time of the incident.

The crew were running straw line ready for the hauler to pick up after it had been repositioned and the guy ropes re-tensioned. There were no other persons working on the landing or behind the hauler at the time.

The hauler driver was about to push the lever that would place the tower in its correct pulling position, when he saw the Acme carriage moving toward the hauler. There was a bang and the tower fell to the ground behind the hauler.

Contributing Factors

The incident investigation identified a number of contributing factors.

- Failure of the stabilizer ram - there was a failure with the connection of the piston to the ram. The piston is normally done up very tight and held in place by a grub screw and sometimes Loctite (or similar). In this case the stabilizer ram didn't have grub screws installed. This allowed the stabilizer ram to pull apart after the piston unscrewed from the end of the ram. The grub screws are not visible so without taking the ram apart there would be no way to know they were installed. Standard annual tower inspections would not pick this up.

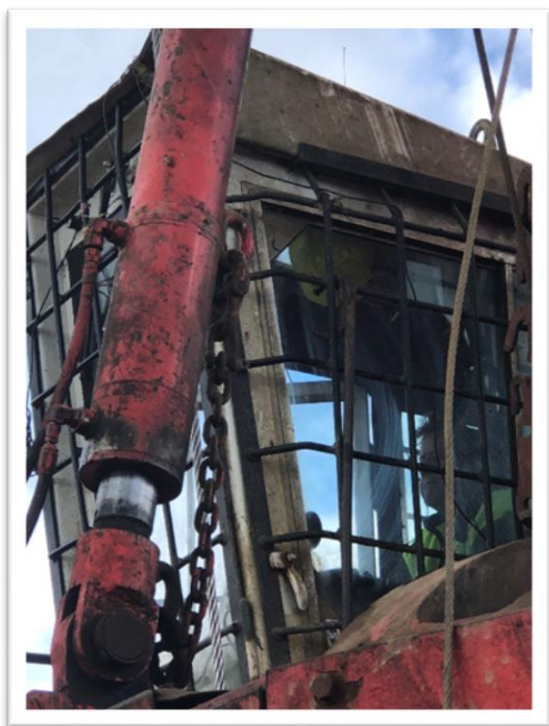


Photo 3: Safety Strop (chain) example

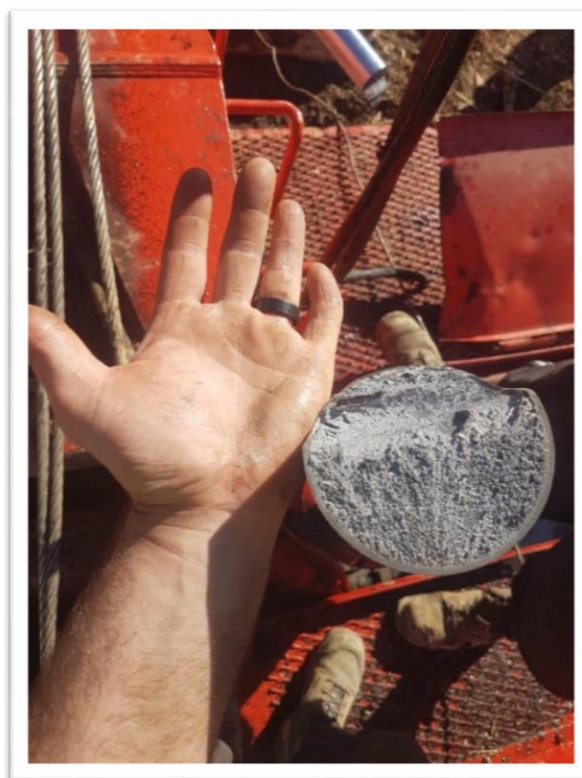


Photo 4: Severed lifting ram (consequence of stabilizer ram separation and tower collapse)

- A snap guy (front guy rope) was not in use as a safety precaution. The snap guy would not have prevented the stabilizer rams from failing, but would have reduced the risk of the tower falling.
- The tower should be in the travel position or at least lowered to 50 foot to move and rig. This greatly increases stability and reduces the chance of failure due (as per manufacturer's recommendations)
- A safety strop (chain) could have been fitted on the stabilizer ram. While a strop would not have prevented the ram failing, it would have prevented the tower falling over when the ram failed.

Prevention - what can be done to prevent recurrence?

- In this scenario it is best practice to use a snap guy to counter forces from behind the hauler. It is recommended that this is put in place at the same time as the guy ropes are connected and before lifting/tensioning. A snap guy can be any of the 3 working ropes (Sky, Main or Tail, depending on the

system being used.) This process should be carried out at 50 foot before any of the guy ropes are tensioned.

- It is not recommended that the hauler is moved whilst the tower is at 70 foot. This could create a pendulum effect and make the hauler unstable. This will create extra weight and stress on the stabilizer ram and other parts of the tower. Follow the manufacturer's recommendations for shifting machine.
- Install a suitable strength safety strop (chain) on the stabiliser ram. This will help prevent the tower from falling over in the event of stabiliser ram failure.
- Do not assume that the area directly behind a hauler is a safe zone. In this case there were log stacks behind the hauler. Often we observe crew vehicles, safety zones, QC decks and smoko huts behind the hauler, as this is assumed to be a safe zone.
- Mark and monitor the length of exposed hydraulic ram to confirm separation is not occurring.
- Ensure that only competent and qualified experts perform maintenance / repair work on machinery, especially safety critical components.

Acknowledgements

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