

Key Lessons

Title

Date of Incident: 2016-02-22

Site: Back Lane Quarry

Country: United Kingdom

Main hazard/ Risk: Other

Description of Event:

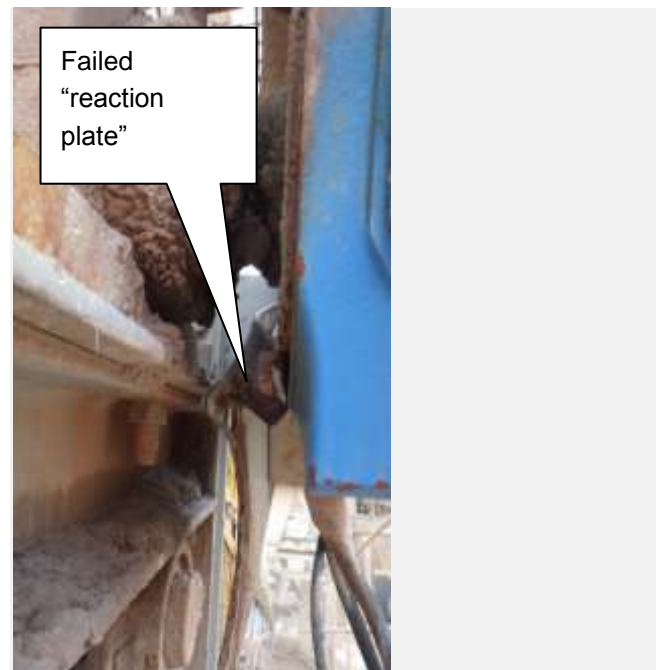
A conveyor had been running for a period of time before tripping. During the investigation as to why the conveyor had tripped a site supervisor positioned himself alongside the conveyor drive head ready to observe any potential problem, whilst a 2nd operator re-started the conveyor. Upon startup the gearbox and motor rotated 180degrees and struck a glancing blow to the supervisors left arm and shoulder. The conveyor was isolated and an investigation was carried out

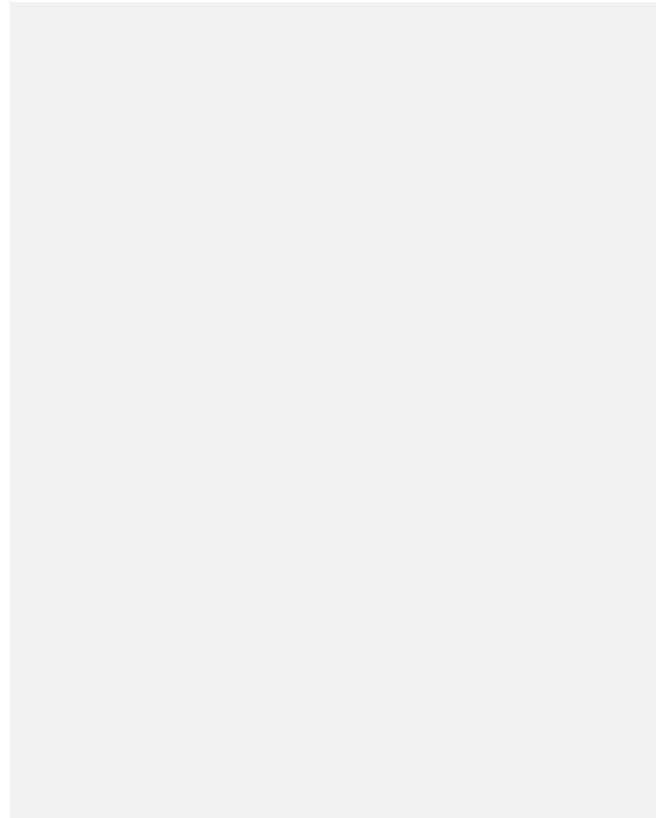
This unplanned movement was a result of a failed “reaction plate” (a device designed as to prevent the drive gearbox from rotating) and could have resulted in a serious injury to the supervisor.

Key points from the investigation

- The supervisor had recognised the unplanned event and had assessed his personal positioning prior to the conveyor starting up
- The supervisor had given the command to start the conveyor having assessed the light load upon the conveyor
- The conveyor feed hopper had been left full with wet product and had caused the conveyor to be overloaded at the return end
- The conveyor drive’s “reaction plate” mode of failure suggests some movement of its retaining bolts
- The “reaction plate” retaining bolts were not fitted with spring retaining washers or other suitable retaining device
- No access is readily available to check or inspect the security of these securing bolts

Photographs:





Key Lessons after Incident Investigation:

Root Causes	Category	Corrective and Preventive Actions
The "reaction plate" had not been secured with studs fitted with spring washers. Over a long period of time the retention holes became elongated and failed.	1. Physical Conditions	Ensure a detailed scope of works at the conveyor design stage is in place. Ensure a full comprehensive installation and commissioning process is adhered to. All retention devices are to be checked for the presence of spring washers or other retaining method
Due to visual restrictions the movement of the retaining bolts had not been identified during routine inspections or pre-start checks	3. Management System	Systematic examination of all conveyor drive security to encompass the checking of all "reaction" devices. Time must be allocated to allow access to those units where access is limited. An assessment is to be made of the different reaction devices in use and provide adequate training and instruction to ensure appropriate maintenance is carried out
A non standard "reaction plate" was fitted by the conveyor OEM. The plate was 5mm in thickness and had failed at its weakest cross sectional area	1. Physical Conditions	The conveyor OEM have now provided and fitted a double thickness "reaction plate". An additional a "reaction" device has been fitted to the conveyor to contain a similar failure. All other OEM drives have been examined and were found to be secure.

1. Physical Conditions Examples include: Controls, Visibility, Upset Conditions, Noise/Vibrations, Equipment Facility design, Warnings, Environment

2. Human Factors Examples include: Cognitive, Psycho-Behavioral, Physical/Mental Limitations, Perceptual, Self-imposed stress, Personnel

3. Management System Examples include: Training, Accountability, Communications, Planning & Evaluation, Rules and Procedures, Supervision, Incident Investigation

4. Culture, Perception and Beliefs Examples include: Risk Tolerance, Visible Leadership, Employee Engagement, Value for Safety, Norms, Drift, Goals



Communication Principles

- Determine a country wide process for distribution of this document, including appropriate corrective actions for all levels of the organization.
- Communication should include discussions in Team Meetings, Toolbox Talks, posting on Notification Boards, email distribution, and developing and sharing relevant action plans



Important Actions

- Perform a gap analysis based on the information in this document.
- Establish the action plan including objectives and processes necessary to ensure a similar incident will not occur at your sites.
- Implement the action plan, execute the process, close the gaps.
- Collect data to track implementation until completion