Fatal 5 - Readymix discharge cone and frame weighing 350 kg fall during cleaning operation due to mechanical failure

WHAT HAPPENED

The discharge cone on a readymix plant was being lowered for cleaning purposes. The cone, which is attached to a frame, was released from its four locating pins. The Plant Manager lowered the cone into the cleaning position, resting on the winch and two hinge pins.

He had walked away to get tools to clean the cone when he heard a loud crash. He returned to the loading area to find the frame and discharge cone had fallen to the ground; it is estimated that the combined weight of the assembly was 350kg.

Initial investigations indicate that the split pins had sheared off the pivot point, combined with possible distortion in the frame, which allowed movement and the frame to detach from the pivot point. Fortunately, the Plant Manager was not in the line of fire when the failure occurred. Image below shows discharge cone and lifting frame on the ground.



KEY FINDINGS

Preventative maintenance - It is believed the split pins on the pivot end of the frame had sheared off through wear and tear and regular lowering of the frame assembly.

Preventative maintenance - Manufacturer's recent PMI inspection did not identify any issues with the cone/frame assembly.

Operating procedures - The operating manual prohibits the discharge cone from being lowered for cleaning purposes when significant build-up of concrete is present in the discharge cone as this would risk exceeding the Safe Working Load of the winch.

Statutory inspection - The electric winch had not been subject to the required statutory examination regime (LOLER).

LEARNING POINTS / ACTIONS TAKEN

HOW COULD THIS HAVE BEEN AVOIDED

- Ensure maintenance regimes are effective and all load bearing parts of equipment such as pivot hinges are subject to routine inspections in accordance with manufacturer's specification.
- Split pins must be checked for wear to ensure equipment remains in alignment.

KEY REVIEW POINTS

- Consider installation of secondary safety chains with adequate Safe Working Load on the pivot sides of similar plants with a winch operated loading chute.
- Ensure plants are operated in strict accordance with manufacturer's guidelines.
- Ensure winches and fixing points are subject to required statutory inspection regimes.
- Are preventative maintenance regimes effective in highlighting defects to critical components?
- Control access to areas ensuring operators are not in the 'line of fire' when operating plant/equipment, consider exclusion zones/barriers.
- Do we ensure people STOP & THINK/Take-5 before completing tasks?

Image below shows heavy duty safety chains retrofitted to the pivot point on the lifting assembley.



LOCATION:	**READYMIX OR MORTAR PLANT**	**ALERT STATUS:**	**High Potential**
ACTIVITY:	**LIFTING**	**DATE ISSUED:**	**14/03/2024 17:04:45**
SUB ACTIVITY:	**NO SUB ACTIVITY AVAILABLE**	**INCIDENT No:**	**03700**