Retractable access ladders

Mines safety alert no. 366

What happened?

An operator was fatally injured when he became entangled between the movable part of an excavator's access ladder and the wall of the engine room. (See Figure 1)

Fig 1: Excavator with retractable ladder

How did it happen?

Injuries were sustained as a result of entanglement in handrails, following activation of the access ladder emergency release valve.

Why did it happen?

While the Mines Inspectorate's investigation is ongoing, it appears the operator somehow became caught within handrail cell A2 shown in Figure 2.

When the ladder was lowered, following activation of the emergency ladder release valve, which is located behind the stationary handrails, the operator sustained injuries from the moving handrails. (See Figure 3).

The requirements of the OEM are that the emergency release valve is intended to be operated by a pull cable, positioned in a safe location. The investigation has identified that this valve can be activated without the use of the pull cable, which was found to be difficult to operate.

For routine operation, the access ladder is lowered using a set of controls, positioned in a non-hazardous area. These controls were verified as being functional.

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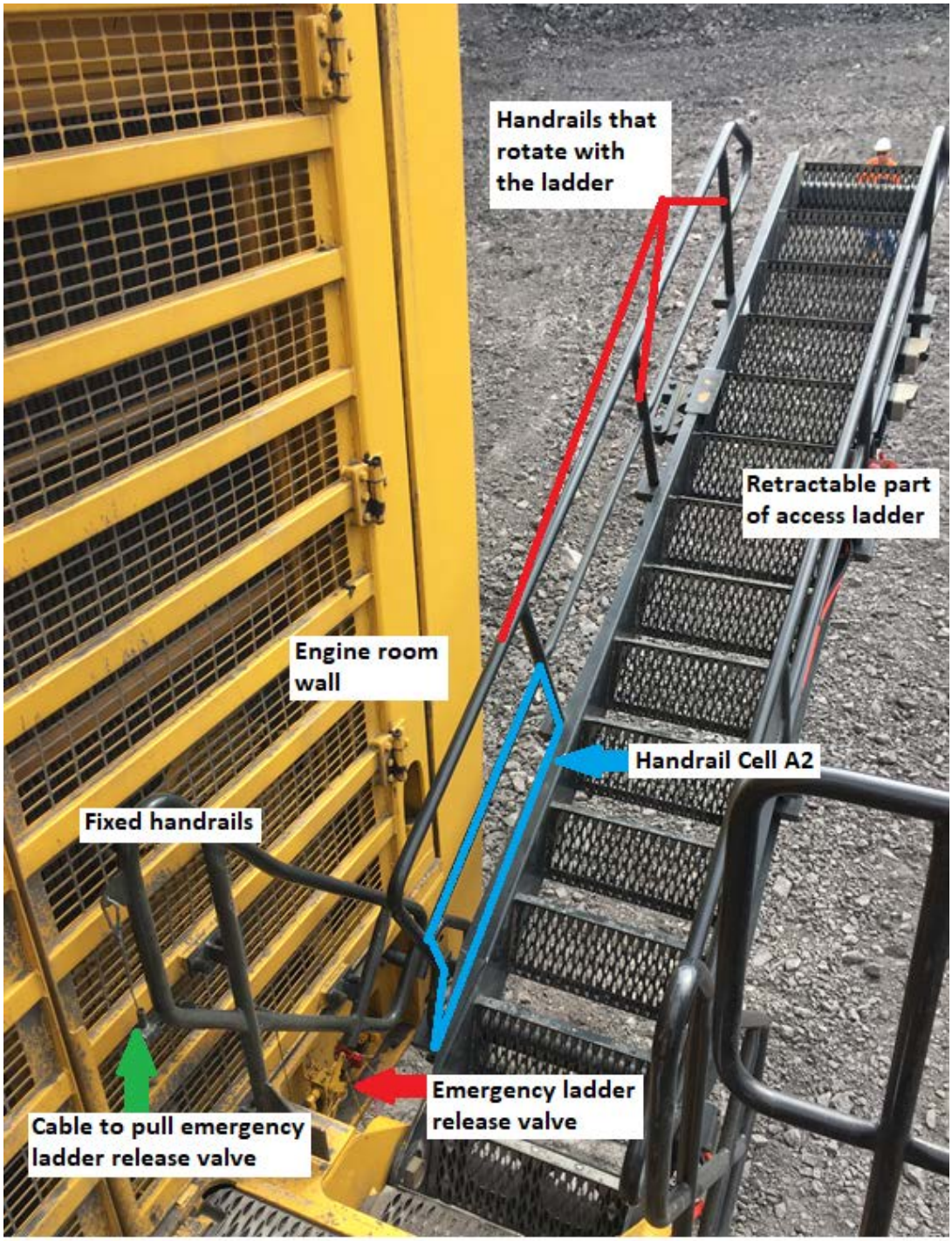

Fig 2: Retractable ladder parts defined for this alert

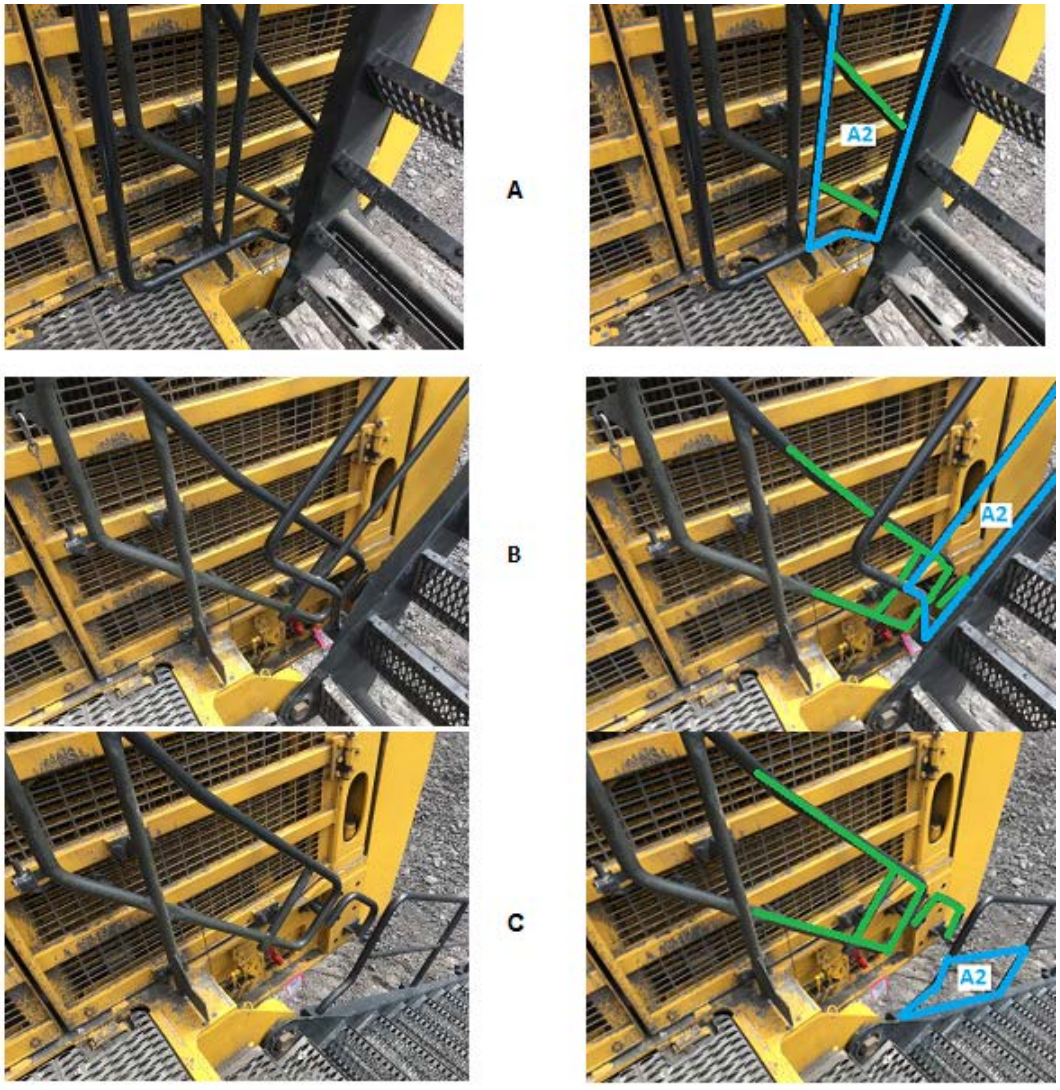

Figure 3 – Scissor action at cross-overs between rotating Cell A2 rails and stationary handrails)

Recommendations:

- Inform users of retractable ladders about the contents of this safety alert.
- Although procedure (an administrative control) required the access ladder to be lowered through a safe process and location, it was physically possible to access the emergency ladder release valve. An engineering control would have been more effective in keeping persons away from this location e.g. by positioning the valve in a place that is not accessible or by covering it.
- The design of the access ladder, where the rotating handrails pass the stationary handrails in a scissor action, should be reviewed.
- Refer to Komatsu 'Parts & Service News subject: "Hydraulically operated access"; Emergency release function, No AH19881; 18 July 2019'.