

FIRES ON MOBILE PLANT

April - June 2019

Mobile plant fires reported during this period include autonomous vehicles and nine underground fires

Figure 1 One of the nine underground fires fuelled by diesel and non-metallic materials



Autonomous vehicle fires

Two fires on unmanned semi-autonomous vehicle fires were reported in the second quarter of 2019 (April to June). One fire on a SATS dozer was seen by the remote SATS operator from a camera. The fire suppression was activated from the remote station.

A second fire, on an autonomous underground diesel loader, was attended to by automatic fire suppression and a hand-held extinguisher.

Recurring drive shaft bearing fires

In the underground metalliferous mines, there have been three fires initiated by drive shaft bearing failures during this period. The number of failures is significant considering the relatively small group of vehicles of this type.

Review our [Safety Bulletin – Drive shaft failures causing fires](#).

Dangerous underground fires

Several dangerous fires occurred in the confines of an underground mining environment. Fires on mobile plant are inherently dangerous. They impact on the safety of workers and have the potential for catastrophic consequences.

Diesel leak

An agitator truck fire, fuelled by a diesel leak, spread quickly because non-metallic engine covers and guards added to the fuel load and the intensity of the fire. Nineteen workers were underground at the time of the incident and had to retreat to refuge chambers while the fire was extinguished.

The use of non-metallic materials that burn and produce toxic emissions should be stopped or minimised on all mobile plant.

Review our [Safety Alert – Non-metallic materials add fuel to underground truck fire](#).

Turbo failure

A turbo failure on a diesel integrated tool carrier produced a significant fire, where flames extended over the cabin.

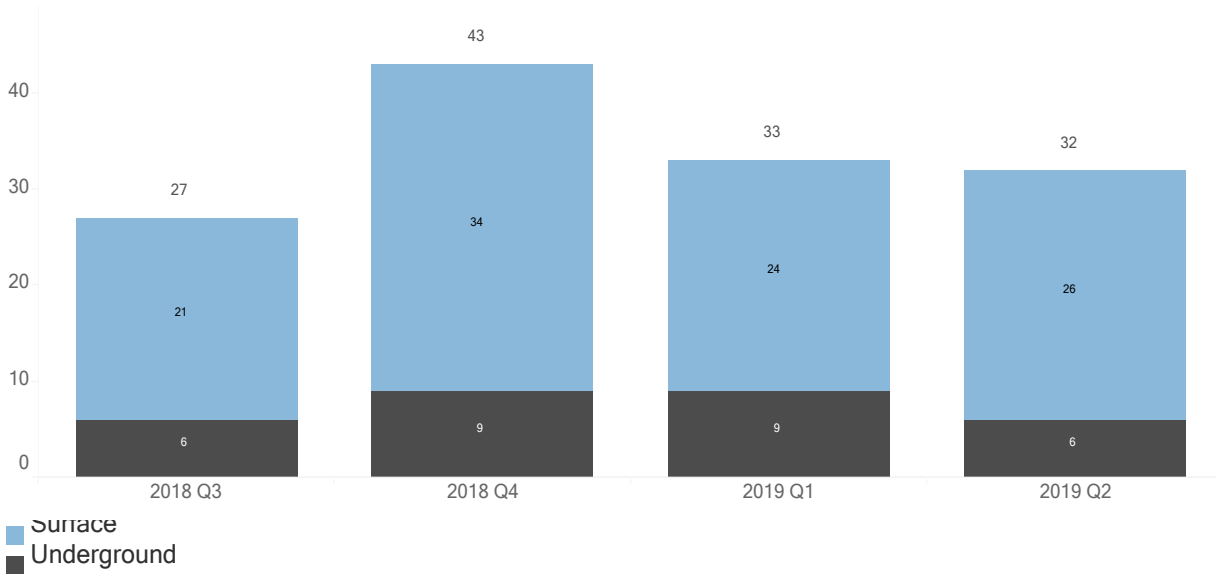
Underground coal diesel particulate filter fire

A discarded DP filter was found on an underground coal vehicle, which showed evidence that the paper element had been on fire previously. This was reported as a failure of explosion-protected equipment.

Statistical data

Incident notifications by primary location by quarter – July 2018 to June 2019

Figure 2 Fires on mobile plant by surface or underground location



Incident notifications by mine type - operation type by month – April to June 2019

Figure 3 Fires on mobile plant for April to June 2019 sorted by depth layers

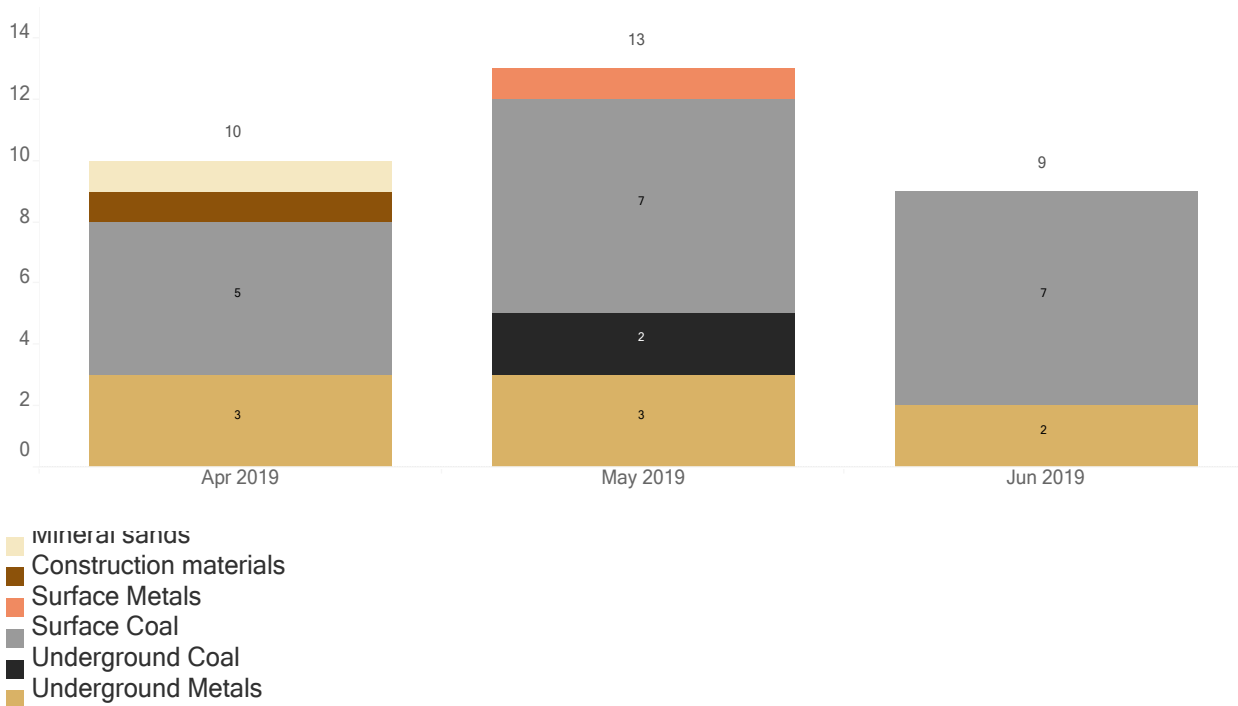


Figure 4 Incident notifications by triage level and response

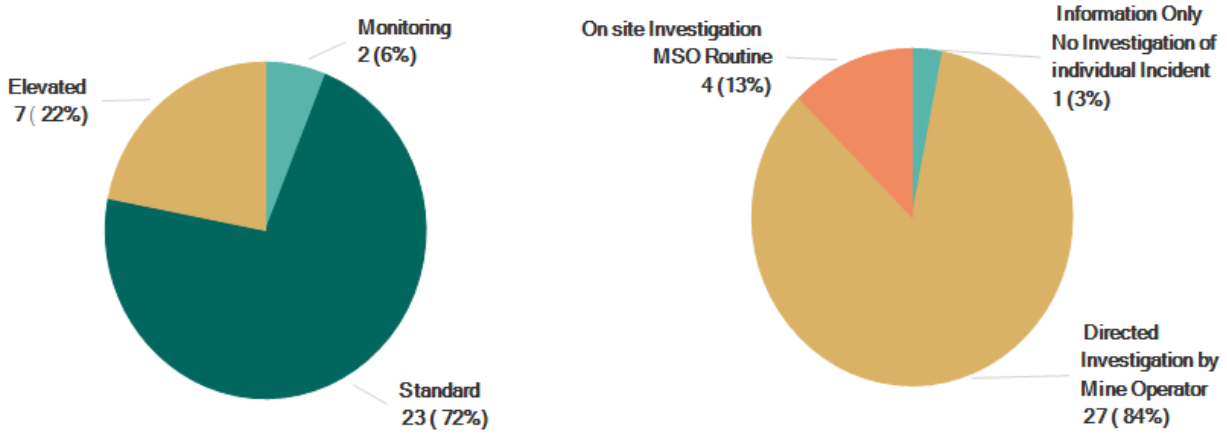


Figure 5 Heat sources identified in ancillary reports

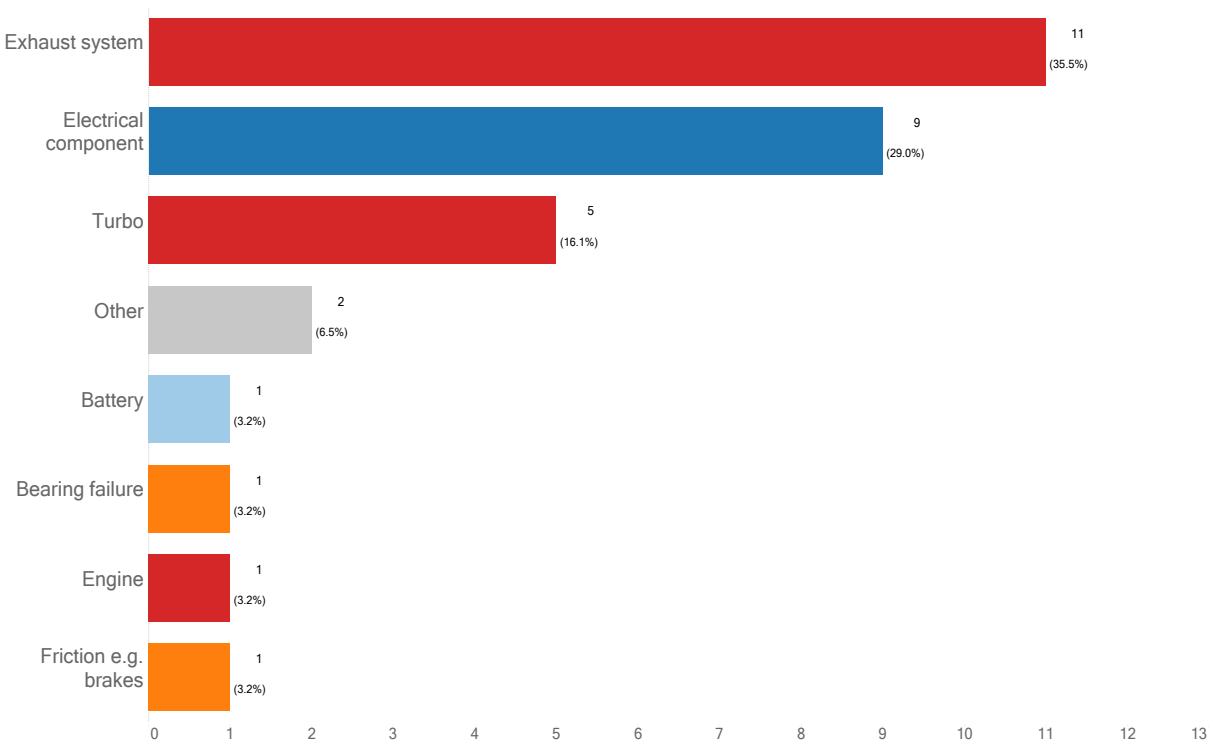


Figure 6 Fuel sources identified by ancillary reports

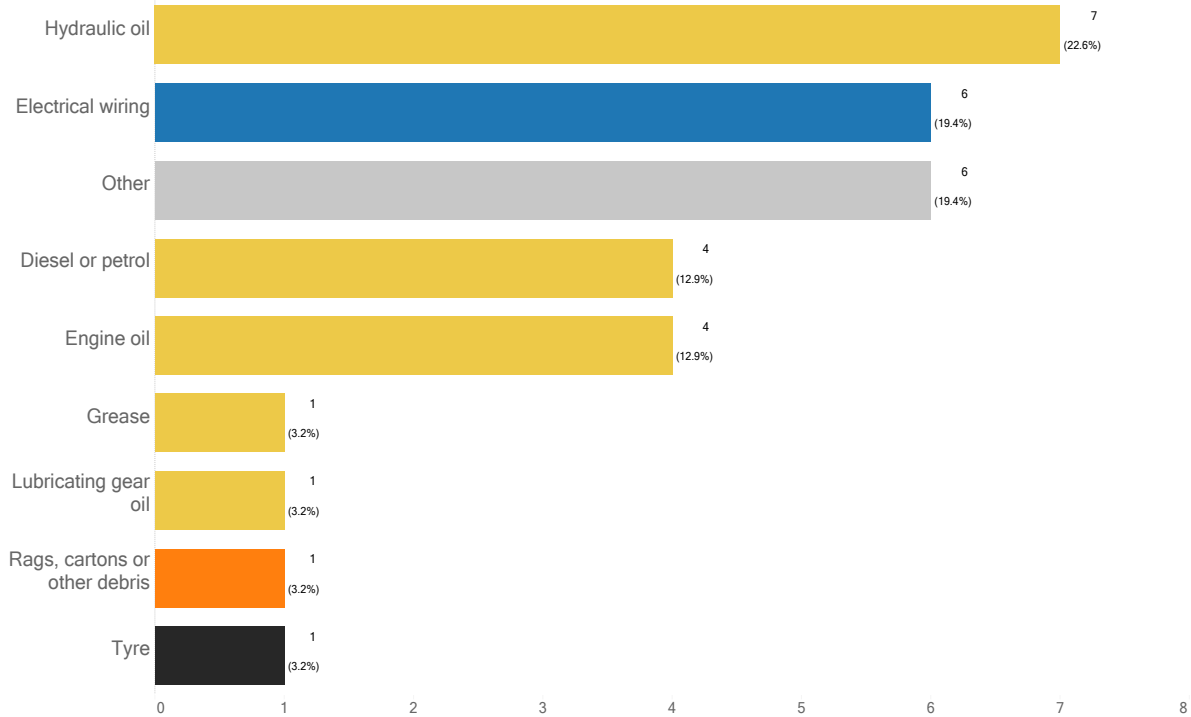
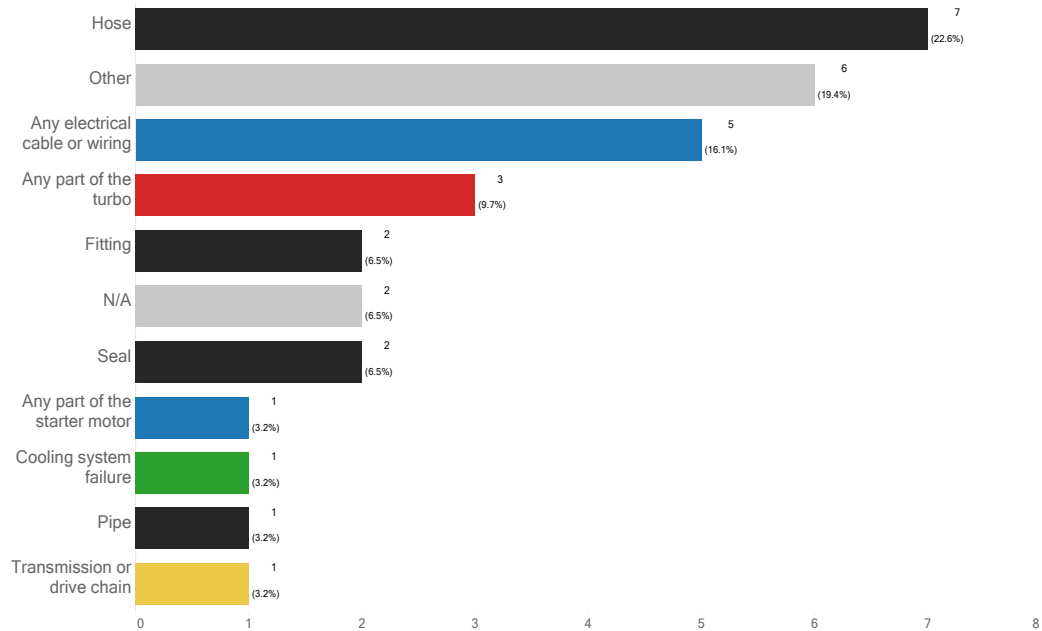


Figure 7 Failed components identified by ancillary reports



Safety incident log (April to June 2019)

April 2019 - Northparkes Mine IncNot 0034294

A remote operator identified that the fire suppression had been discharged. A team leader was nearby and responded to find flames coming from the back of the loader. The fire was extinguished with a hand-held fire extinguisher. An investigation found fuel leaking from a pin hole in a worn fuel line.

Figure 8 Northparkes Mine incident



April 2019 - Bates Quarry IncNot0034305

A power cable for a cooling fan rubbed through on the frame of a machine.

Figure 9 Bates Quarry incident



April 2019 - Tarrawonga Coal Mine IncNot0034333

A broken fuel line bracket caused a fuel line to rub. The fuel line developed a leak, which fuelled a fire.

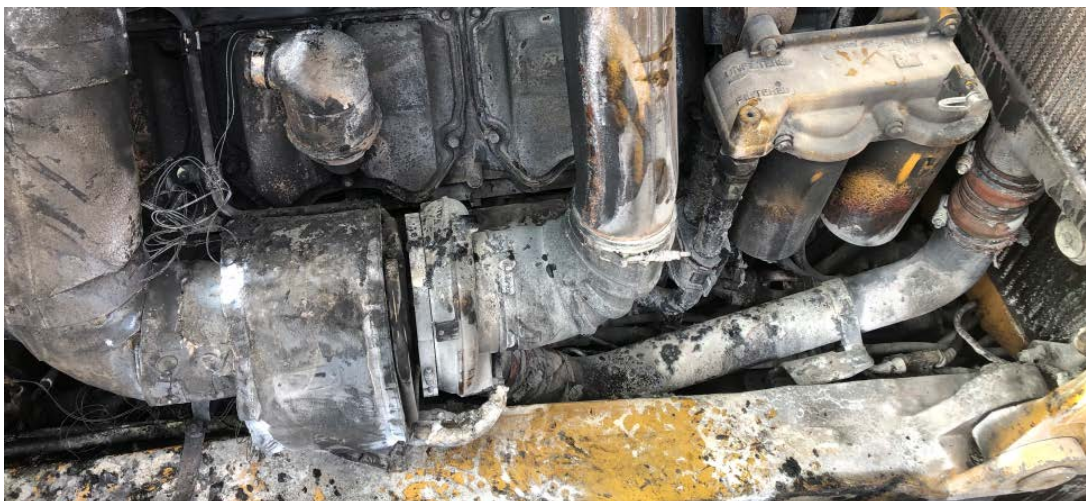
Figure 10 Tarrawonga Coal Mine incident



April 2019 - Wilpinjong Coal Mine IncNot0034353

A dozer was operating in autonomous mode. The operator in the SATS caravan had two dozers working. The cameras were on DZ2010, which was behind DZ2002, and two slots to the north. The operator saw flames and smoke coming from the right-hand side of DZ2002. The operator activated the fire suppression system and called emergency. Failure of the blade tilt pilot hose led to the uncontrolled release of hydraulic oil onto the exhaust system.

Figure 11 Wilpinjong incident



April 2019 - Bulga IncNot0034360

A dozer had pushed past a crest and was some way down a slope when the operator noticed a fire in the engine bay. A decision was made to continue dozing down the slope to the lower level and then the operator was to park up and get out of the dozer. Before getting to the base of the slope, the dozer became caught on a large rock. Once realising that the dozer was stuck, and not knowing how long it would take to free the dozer, the operator activated the fire suppression system and left the dozer.

While trying to use an extinguisher, the operator slipped, tripped and fell.

Figure 12 & 13 Bulga incident showing the dozer at the bottom of the push (night and day)



April 2019 - Rasp Mine IncNot0034374

A loader operator saw a glow emanating from the drive shaft bearing on a Sandvik TH551 ejector truck. Review our [Safety Bulletin – Drive shaft failures causing fires](#).

Figure 13 The Rasp Mine incident



April 2019 - Peak Gold mine IncNot0034377

An agitator truck was taking shotcrete underground. As the truck was travelling up a grade, a Jumbo operator saw smoke coming from the truck. The fire was spreading rapidly as the operator exited the vehicle. He tried to hold the wheel chocks but found them hard to reach. An explosion came from the other side of the cabin, followed by two more. A rock was put under the rear wheel and the operator retreated to safety. The fire suppression system had not extinguished the fire, and the cabin of the vehicle was gutted by fire. After the incident was notified to control via an emergence call, workers went to the underground emergency chambers. Once the fire was confirmed extinguished, the workers were brought out of the mine. Fuel had found its way on to a hot surface and ignited, causing a fire that burnt the cab area of the machine.

Review our [Safety Alert – Non-metallic materials add fuel to underground truck fire](#).

Figure 14 The Peak Gold Mine incident



April 2019 - Bengalla IncNot0034428

There was a turbo fire on a haul truck while it was parked at a fuel farm. There was a split in the Teflon[®] liner of a rear right-hand side turbo oil feed line (possibly from being adjusted without loosening the hose end adequately).

Figure 15 Bengalla fire incident



Mt Arthur IncNot0034429

"It was instant – just like a big flame, with no warning."

A fire occurred on a water truck at the top of a ramp. The fire was not extinguished by the fire suppression system. Failure of a brake cooling hydraulic pipe at the flange allowed hydraulic fluid to escape onto a hot surface to cause a large fire.

Figure 16 Mt Arthur incident



April 2019 - Peak Gold Mine IncNot0034443

An underground Caterpillar 2900 loader experienced a fire while it was underground. The fire suppression automatically activated. The operator used a fire extinguisher to completely put out the fire. A loose electric cable from the main isolation switch rubbed against a radiator housing and caused a short-circuit, which melted plastic insulation of the cable and caused a small fire and smoke.

Figure 17 The Peak Gold incident



April 2019 - Snapper Mineral Sands IncNot0034462

An excavator operator reported seeing flames emitting from the exhaust stacks on the machine. He shut the machine down and the flames self-extinguished. As part of overhaul works on the excavator, 20 millimetre bolts on a hydraulic coupling were not torqued to the bolt specifications. This allowed the recently replaced O-ring to fail under pressure, resulting in spraying hydraulic oil into the atmosphere, that subsequently landed on the excavator's exhaust tips.

Figure 18 Snapper Mineral Sands incident



May 2019 - Chain Valley Colliery IncNot0034517

Wiring short in the roof lining of a road registered water truck.

Figure 19 Chain Valley Colliery incident



Cadia Valley IncNot0034518

An underground loader's power supply cable to up-box temperature sensor and flow sensor failed at a splice, generating heat and causing the insulation to ignite.

Figure 20 Cadia Valley incident



May 2019 - Werris Creek IncNot0034528

An excavator was parked up off the bench for cleaning and de-greasing when a fire was discovered in the exhaust area. The low flash point degreaser ignited when it came into contact with the hot exhaust surface.

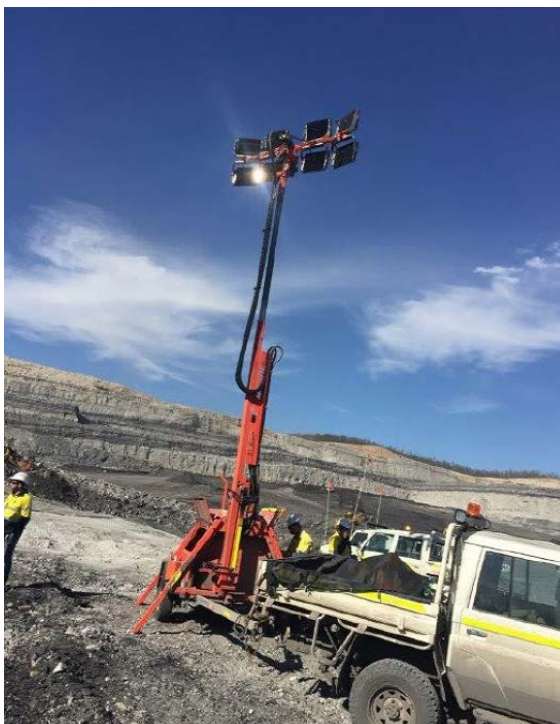
Figure 21 Werris Creek incident



May 2019 - Maules Creek IncNot0034583

An operator opened a lighting plant to operate hydraulic legs to move the plant outside a 500 metre blast exclusion zone. The battery exploded and the operator was splashed with battery acid. A fireball the size of a football erupted.

Figure 22 Maules Creek incident



May 2019 - Tritton Copper Mine IncNot0034587

Flames from a motor bay extended over the cabin. The fire suppression system was activated and smoke filled the cabin. There was an internal mechanical failure of the turbocharger unit.

Figure 23 Tritton Copper Mine incident



May 2019 - Hunter Valley Operations IncNot0034613

A truck's brake lines were damaged as a result of spillage just before the incident occurred. This spill entered the brake hub area and damaged the brake lines, which resulted in a hydraulic oil spray. A loss of hydraulic oil pressure in the POS 3/4 brake calliper also resulted in automatic application of the park brake, which generated an ignition source from the brakes dragging while the truck was travelling to the park-up area.

Figure 24 Hunter Valley Operations incident



May 2019 - Bengalla IncNot0034634

Internal failure of auxiliary transformer on the offside deck of a truck.

Figure 25 Bengalla incident



May 2019 - Wambo IncNot0034678

The electrical lead between a battery and an emergency steering electrical motor went to ground resulting in heating and ignition of the cable insulation.

Figure 26 Wambo incident



Wilpinjong IncNot0034657

The cause of a water cart fire was attributed to fuel leaking into an alternator from a failed fuel line. Arcing occurred in the field coil windings in the alternator, igniting the leaking fuel. The fuel line failed due to abrasion with hose sheathing and clamp.

Figure 27 Wilpinjong incident



May 2019 - Tomingley Gold Mine IncNot0034670

A flashing beacon, which was held by a magnet, fell onto an engine bay.

Figure 28 Tomingley Gold Mine incident



May 2019 - Airly Underground Coal Mine IncNot0034700

During the night shift, a fitter was completing a 250-hour service and repairs to a coal tram when he found an old fuel filter within the engine bay that had evidence that the paper element had been on fire previously.

Figure 29 Airly Underground Coal Mine incident



May 2019 - Potosi Operations Perilya Broken Hill IncNot0034735

A hydraulic oil hose failed due to rubbing against a turbo cover. The fire was extinguished by a hand-held fire extinguisher.

Figure 30 Potosi incident



Mt Arthur North IncNot003444769

Hydraulic oil ignited on a lagged exhaust, adjacent to a turbocharger. Incorrect adjustment of the feed chains on the drill mast allowed the rotary head to travel further up the mast, causing the rotation motor hose to hit the mast weldment. This caused a mechanical failure to the hose and a large amount of oil was sprayed over the rig.

Figure 31 Mt Arthur North incident



May 2019 - Wilpinjong IncNot0034791

A poor copper brazed assembly joint in a dozer led to premature failure.

Figure 32 Wilpinjong incident



May 2019 - Rasp Broken Hill Operations IncNot0034782

Corrosion on terminals of an Anderson plug (jump start) allowed a short circuit to be formed with the mounting bolt of the Anderson plug to the bulbar of the light vehicle.

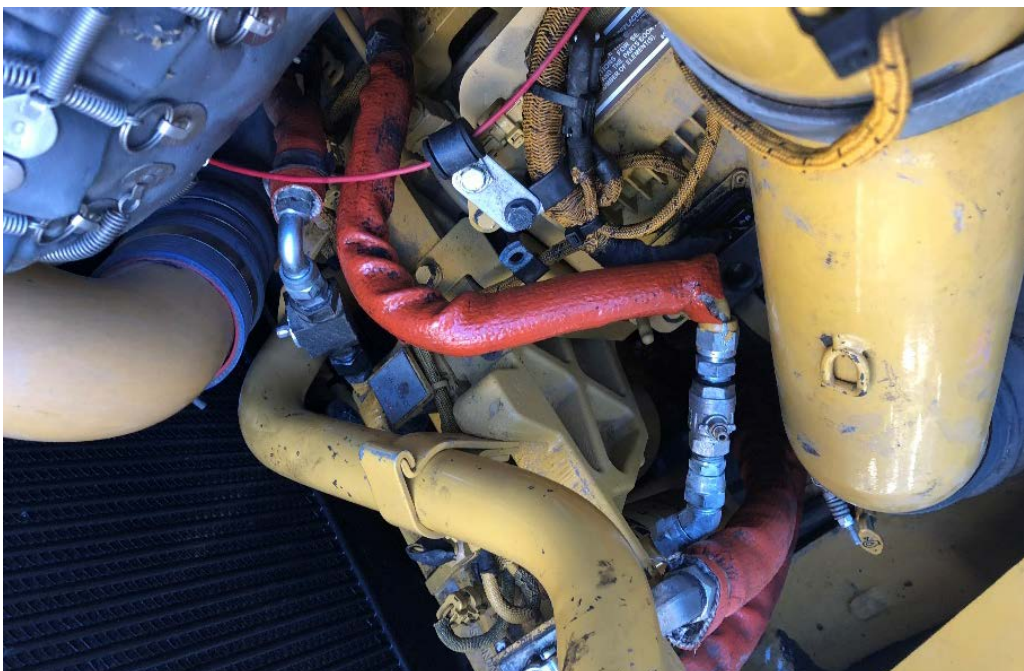
Figure 33 Rasp mine incident



May 2019 - Wilpinjong IncNot0034806

Diesel from a fuel filter tap was leaking in an engine bay and came into contact with the exhaust system. A defect was identified at the scheduled service however the repair was not executed effectively.

Figure 34 Wilpinjong incident



May 2019 - Wambo Open Cut Coal Mine IncNot0034843

A coolant leak occurred on a drill rig from a short rubber hose that connected two hard pipes.

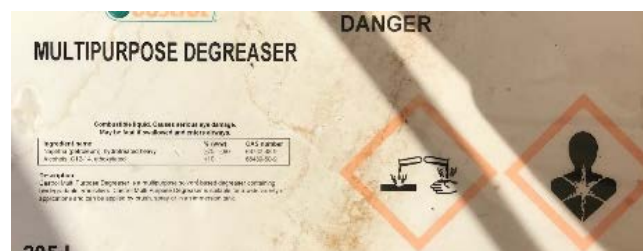
Figure 35 Wambo Open Cut Coal Mine incident



May 2019 - Hera mine IncNot0034828

While spraying degreaser around a truck's engine bay, some of the degreaser ignited. The flame burnt through the burn tube of a fire suppression system in the engine bay, which extinguished the fire. The workers were trying to wash hydraulic oil off the machine from a blown hose that had occurred earlier that day.

Figure 36 & 38 The Hera Mine incident



May 2019 – Moolarben Open Cut Mine IncNot0034915

While operating a drill, the operators observed a small fire around the turbo. The turbo drain line was loose, causing the fire.

Figure 37 The Moolarben incident



May 2019 - Mount Thorley Walkworth IncNot0034918

A fire occurred as a result of a wheel rim rubbing on a wheel hub.

Figure 38 Mount Thorley Walkworth mine incident



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