NSW GOVERNMENT

NSW Resources Regulator

FIRES ON MOBILE PLANT

July – September 2021

NSW Resources Regulator

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Contents

Overview

In FY 2022 Q1, there were:

Incident notifications classified against material unwanted events (MUE)

MUE		Most common threat with failed critical control		Most common failed critical control
Fire or explosion surface **52**	of 52	flammable leaks and spills	of 52	containment
Fire or explosion underground **7**	4 of 7	Mechanical energy in the presence of fuel	3 of 7	Flammable fluid containment

Ancillary reports summary

Heat source	Fuel source	Failed component	Extinguished by
34%	**29%**	**21%**	**36%**
EXHAUST SYSTEM	**ENGINE OIL**	**HOSE**	**HANDHELD FIRE EXTINGUISHER**

Executive summary

This report has been prepared by the NSW Resources Regulator for the NSW mining industry, original equipment manufacturers and suppliers. It contains quarterly data of notified incidents involving fires on mobile plant (FOMP) for the period 1 July 2021 to 30 September 2021.

The Regulator's position is that all fires on mobile plant are avoidable and preventable and we have adopted a zero-tolerance approach where mine operators have not taken appropriate steps to manage this risk.

Fires on mobile plant are inherently dangerous. They affect the safety of workers and have potentially catastrophic consequences. Despite a focus on the issues in recent years, the number of incidents remains high. The Regulator is committed to working with industry to ensure health and safety obligations are being met to reduce the number of fires on mobile plant and to prevent potentially catastrophic events.

Quarterly data for 1 July 2021 to 30 September 2021 identified the following:

- this quarter shows a 26% increase in fires on mobile plant incidents from last quarter
- there were 29 FOMP incidents in September 2021, the highest number of incidents per month in the period since June 2018
- there were two fire on mobile plant notified incidents at a mine categorised as industrial minerals, the first FOMP incidents for this mine type category since the FY 2020 Q3 period.

Emerging trends and recommendations

Throughout this reporting period, the following were identified as an ongoing and or emerging trends:

- hose failures due to poor installation, routing, and segregation
- poor installation of components.

Recommendations

Hose failures

Effective control measures should be applied to the management of hoses, including:

- All pipes and hoses should be routed and supported in a manner that will give them maximum mechanical protection against wear and damage.
- All pipes and hoses should be adequately segregated to prevent rubbing.
- Shielding should be installed between pipes/hoses and any adjacent components that have operating surface temperatures more than 150 degrees Celsius (for example fire walls, lagging and deflective guards).
- Installation drawings are to be provided/made available to workers.
- Inspections of all hoses are to be included in maintenance and inspection regimes.
- Maintenance strategies for the replacement of hoses must take into consideration the risks associated with their failure to the health and safety of workers based on the hose location. This should include the risk to workers both directly (fluid injection) and indirectly (fire).
- The strategy for hose replacement should include considerations for any recommendations from manufacturers and the analysis of data from past failures.
- Workers who are installing and inspecting hose assemblies must be trained on what to look for, replacement criteria and correct methods of installation.

A number of the above issues are similar in nature to the issues identified in the mining design guideline (MDG 41) Fluid power safety systems at mines.

Mine operators should also review the times allocated for inspecting hoses to allow workers sufficient time to carry out inspections.

Poor installation of components

Mine operators should review the following:

- The training and competence of workers in relation to the work they are undertaking.
- Supervision of workers.
- Timeframes allocated to tasks to ensure enough time has been allocated
- The handover information provided to workers when activities are being conducted over multiple shifts.
- Work order information/instruction provided to workers. This information should include all the relevant information to carry out the tasks being performed. For example, but not limited to the torque requirements for components, installation procedures or instruction, drawings/schematics, extract from manufactures manuals, commissioning checks
- The re-use of previously torqued bolts. Bolts that are required to be torqued should be replaced in accordance with manufactures recommendations
- The checks carried out prior to returning equipment to service post maintenance.

Significant incidents

July 2021

A Hitachi EH5000 haul truck caught fire whilst driving on the haul road at an open cut coal mine. The operator stopped and exited the truck.

Figure 1: Haul truck fire

The truck was completely engulfed, and a 1 km exclusion zone was set up around it. Once all tyres were confirmed to be deflated by use of a drone, the truck was accessed by water carts. The water carts doused the truck and put out the remaining flames

This incident is a reminder of how quickly a fire can propagate and the importance of fit-for-purpose access systems and operator training for emergency situations. Training should include the use of primary and secondary access systems.

August 2021

The operator of a Caterpillar R2900 underground loader at an underground metalliferous mine noticed sparks from beneath the engine bonnet and stopped to investigate. A small fire was discovered, and the operator manually activated the AFFF fire suppression system to extinguish the flame.

This incident is a reminder of the importance of quality maintenance and pre-use inspections in the prevention of premature failure of components.

September 2021

The operator of a Volvo L120E Integrated tool carrier at an underground metalliferous mine was driving underground when they noticed steam coming from the engine bay. They pulled over to investigate and noticed a small flame. The operator activated the fire suppression system.

This incident is a reminder that the residue left behind from glycol-based coolants, once exposed to hot exhaust components, can auto ignite.

September 2021

An operator was at a transtank (in pit fuel farm) refuelling a Caterpillar 16m grader when fuel began to overflow from the top of the fuel tank.

The operator disconnected the fuel hose from the grader then noticed smoke at the top of the tank before seeing flame. The operator entered the graders' cabin to call an emergency and the fire system automatically activated. The worker than proceeded to fight the fire with a water hose and a fire extinguisher.

Figure 2: Grader fire damage and location

This incident is a reminder of the importance of quality maintenance and fit for purpose replacement parts.

Notified incidents

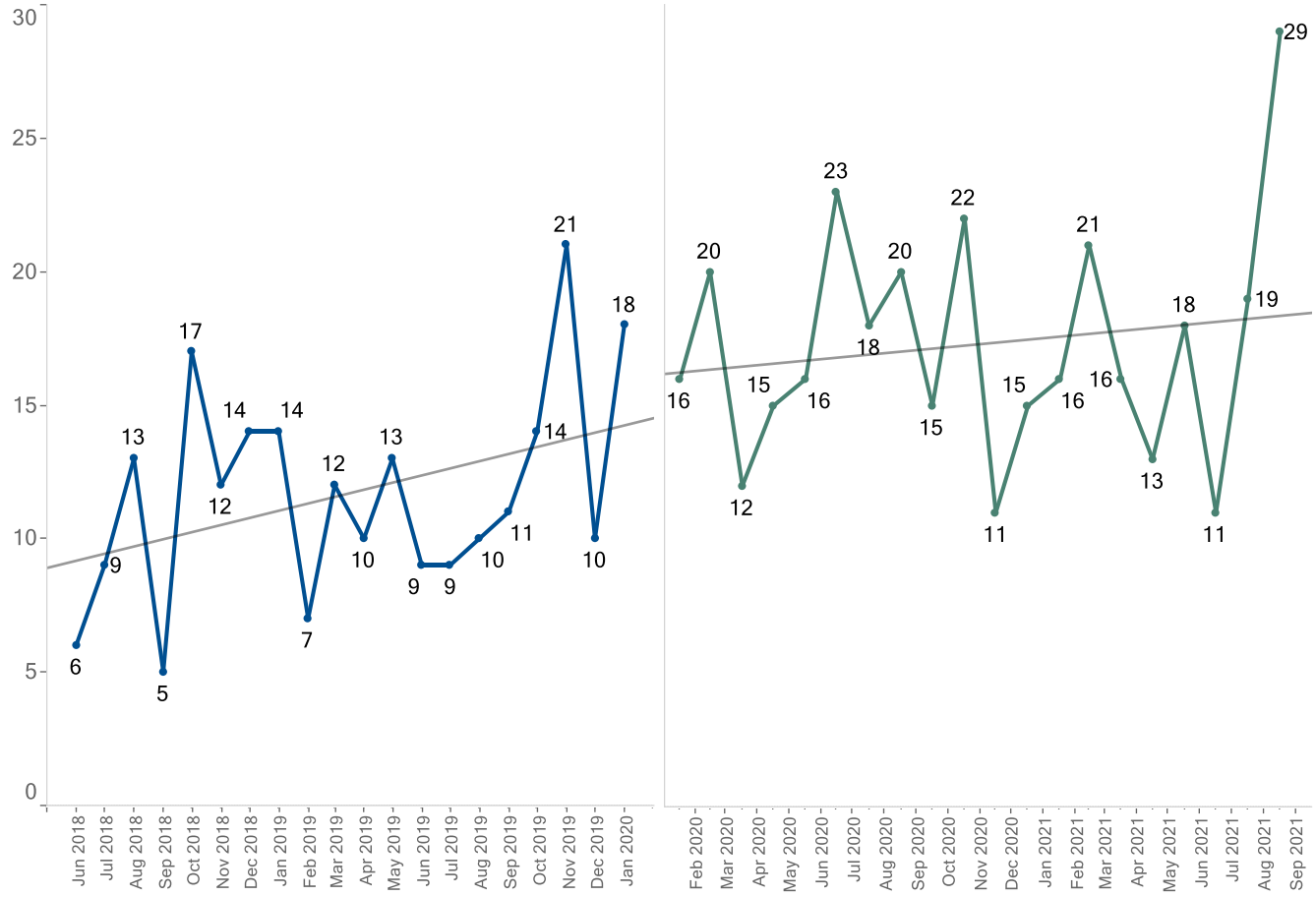
Notified incidents between June 2018 and September 2021

Figure 3 relates to incidents involving fires on mobile plant notified to the Regulator each month since June 2018, based on the date the incident occurred.

In February 2020, amendments to the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 saw a change to the duty to notify all incidents involving fires on mobile plant (see Annexure A). The two trend graphs below represent the periods before and after this amendment took place.

There were 29 fires on mobile plant incidents in September 2021, being the highest number of incidents recorded per month in the period since 1 June 2018.

Figure 3: Notified incidents between 1 June 2018 and 30 September 2021



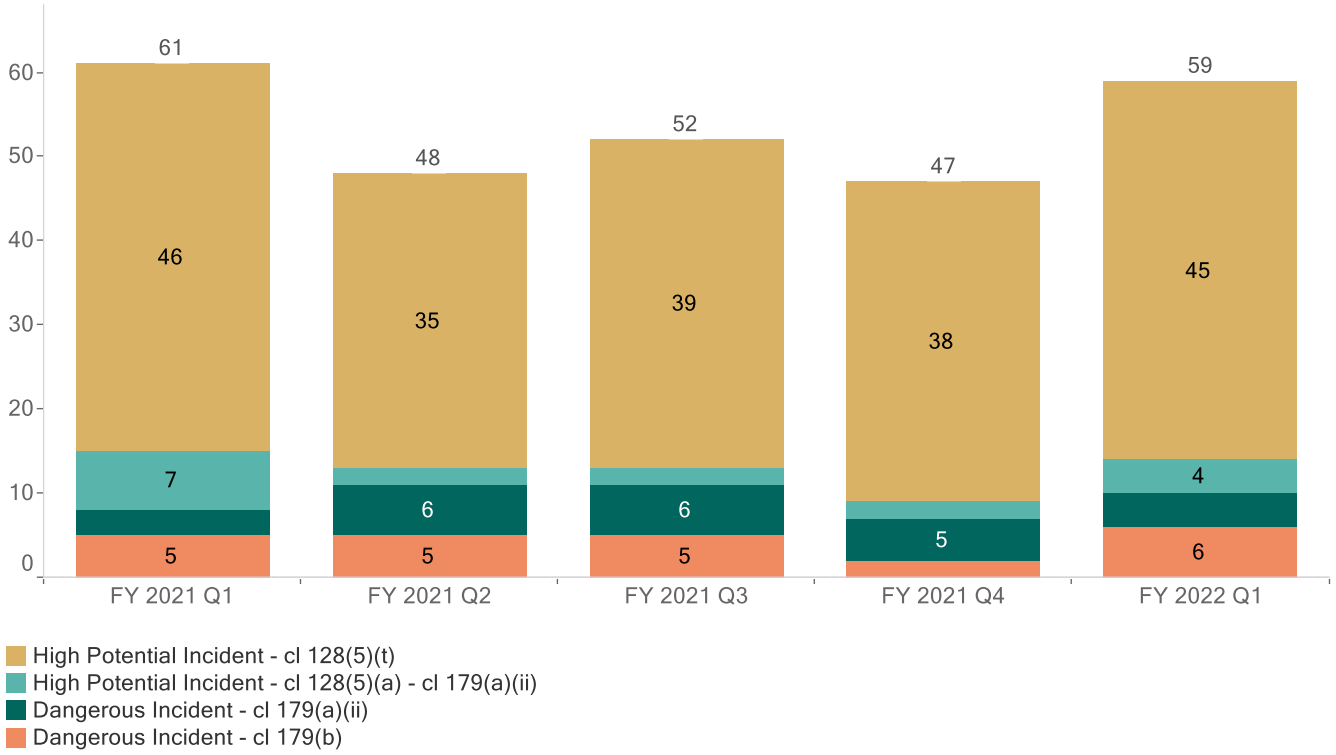
Notified incidents by legislative requirement to report

Figure 4 highlights the number of notified incidents recorded by the legislative requirement to report.

The majority of fires on mobile plant notified to the Regulator since 1 July 2020 were recorded as a high potential incident under cl 128(5)(t), where there was 'an uncontrolled fire on mobile plant that is in operations (whether operated directly, remotely or autonomously)'.

Six incidents were recorded this quarter as a dangerous incident under cl 179(b) where there was 'a fire in the underground parts of a mine, including where fire is in the form of an oxidation that releases heat and light'.

Figure 4: Notified incidents by legislative requirement to report between 1 July 2020 and 30 September 2021



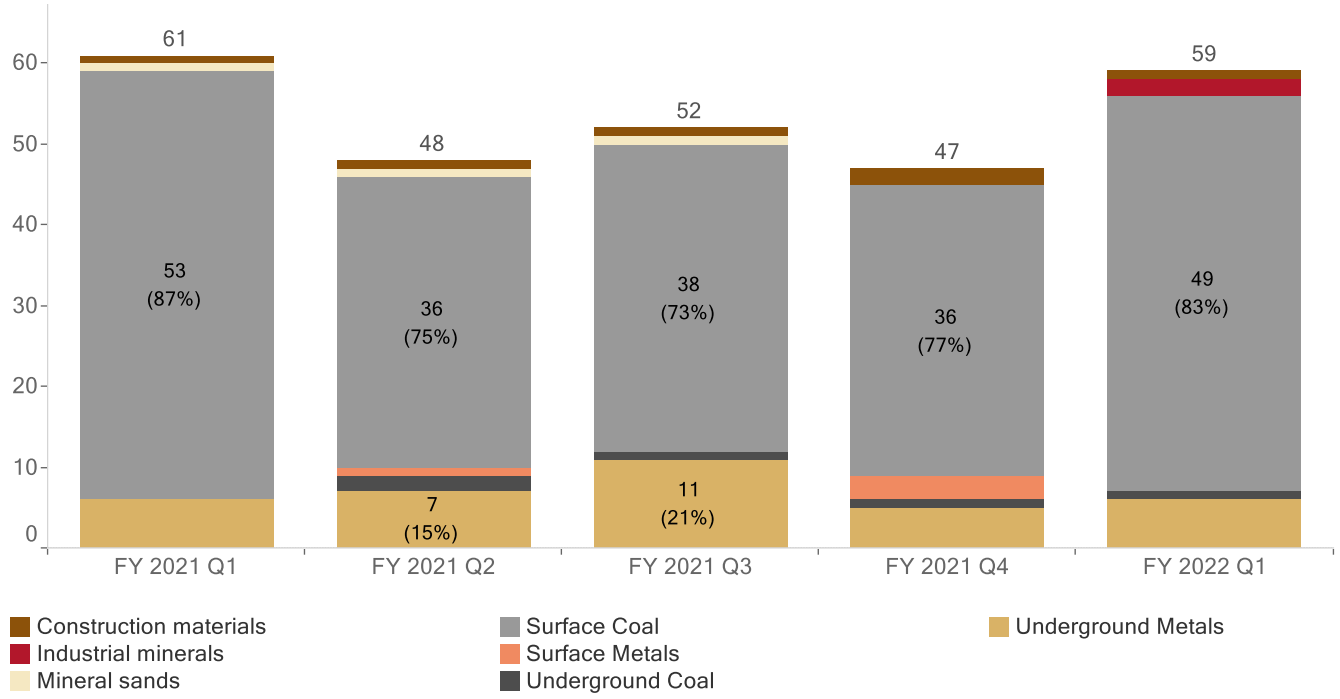
Notified incidents by mine and operation type

Figure 5 shows the number of notified incidents by mine type and operation type.

Surface coal still has the highest number of notified incidents, with 83% of notified incidents for this quarter.

There was an increase in notified incidents occurring at mines categorised as industrial minerals, with two notifiable incidents this quarter. The last FOMP recorded for the industrial minerals' category was in the FY 2020 Q3 period.

Figure 5: Notified incidents by mine and operation type between 1 July 2020 and 30 September 2021

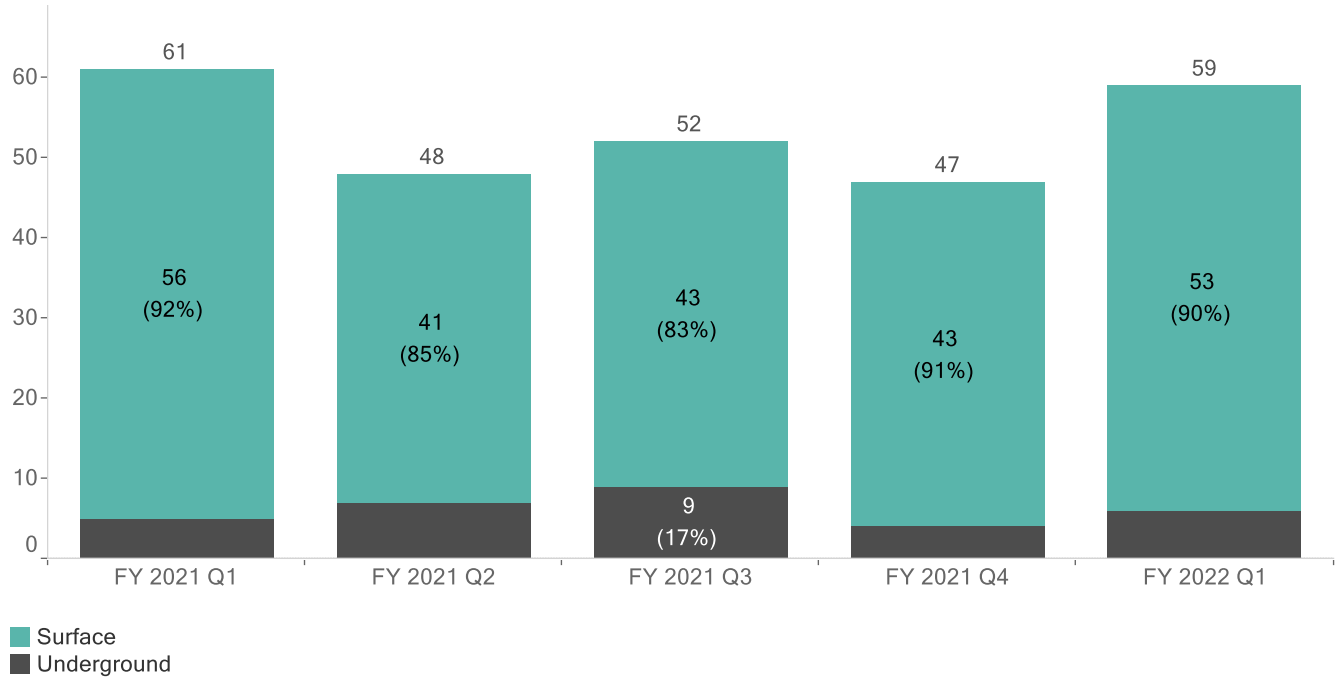


Notified incidents by primary location

Figure 6 shows that the actual location of FOMP incidents, irrespective of the mine operation type, typically occurs on the surface rather than underground. For the past five quarters the proportion of mobile plant fires occurring at the surface has been 80% or higher.

There were six notified incidents this quarter that occurred underground, which is an increase of two from four incidents last quarter.

Figure 6: Notified incidents by primary location between 1 July 2020 and 30 September 2021



Notified incidents by mine type, operation type and incident location

Notified incidents occurring on the surface at a surface coal mine account for 83% of all fires on mobile plant this quarter.

Table 1: Notified incidents by mine type, operation type and incident location between 1 July 2020 and 30 September 2021

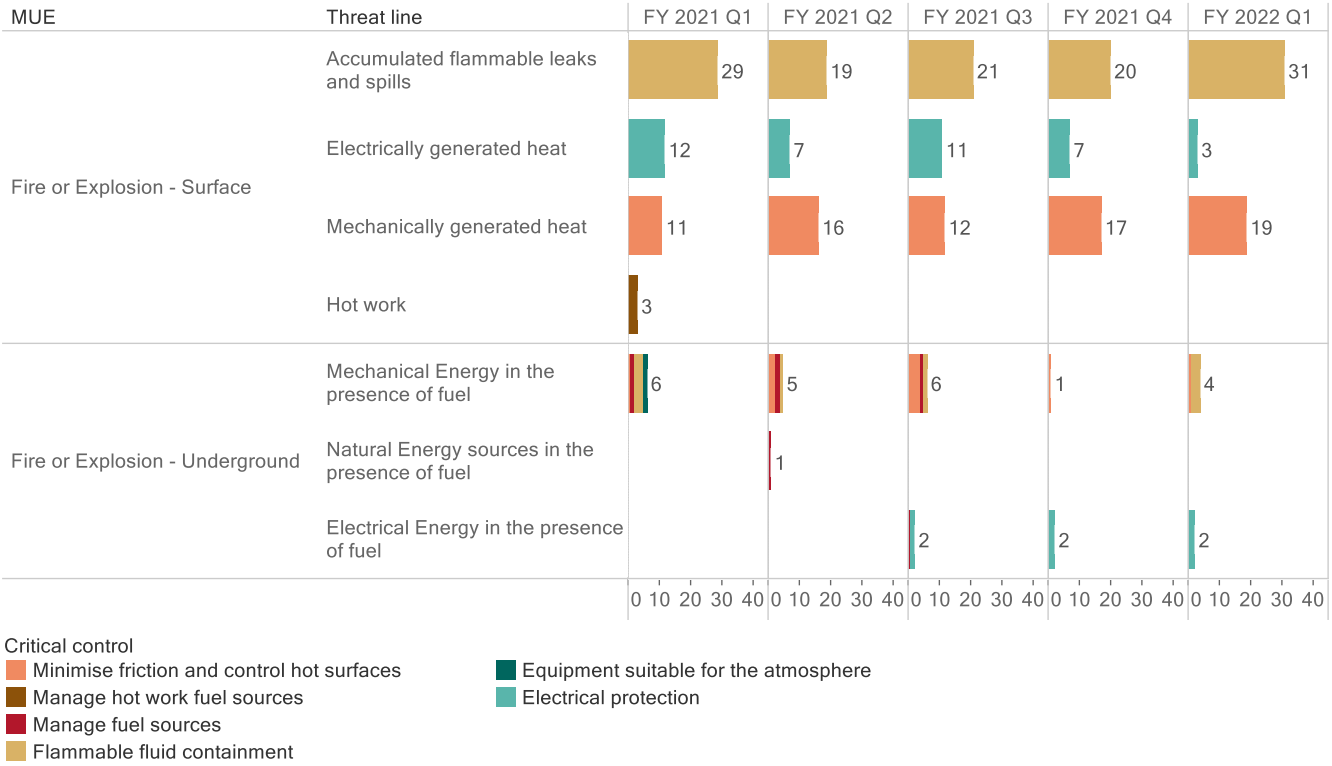
MINE TYPE/OPERATION TYPE/ INCIDENT LOCATION	FY2021 Q1	FY2021 Q2	FY2021 Q3	FY2021 Q4	FY2022 Q1	GRAND TOTAL
Coal/surface/surface	53	36	38	36	49	212
Coal/underground/surface	-	1	1	1	1	4
Coal/underground/underground	-	1	-	-	-	1
Metals/surface/surface	-	1	-	3	-	4
Metals/underground/surface	1	1	2	1	-	5
Metals/underground/underground	5	6	9	4	6	30
Mineral sand /surface/surface	1	1	1	-	-	3
Construction materials/surface/surface	1	1	1	2	1	6
Industrial minerals/surface/surface	-	-	-	-	2	2
Grand total	61	48	52	47	59	267

Classified notified incidents by hazard, threat and critical control

Hazard management bowties are a widely used risk management tool that incorporate preventative and mitigating controls onto threat lines that relate to a material unwanted event (MUE). The Regulator uses MUE bowtie frameworks when proactively assessing how mine sites manage their principal hazards. Since October 2019, these MUE bowtie frameworks have also been used to classify notified incidents. Classifications highlight increased areas of risk at the hazard, MUE, threat and critical control level.

Figure 7 shows notified incidents classified by MUE, threat and critical control.

Figure 7: Notified incidents by MUE, threat and critical control between 1 July 2020 and 30 September 2021

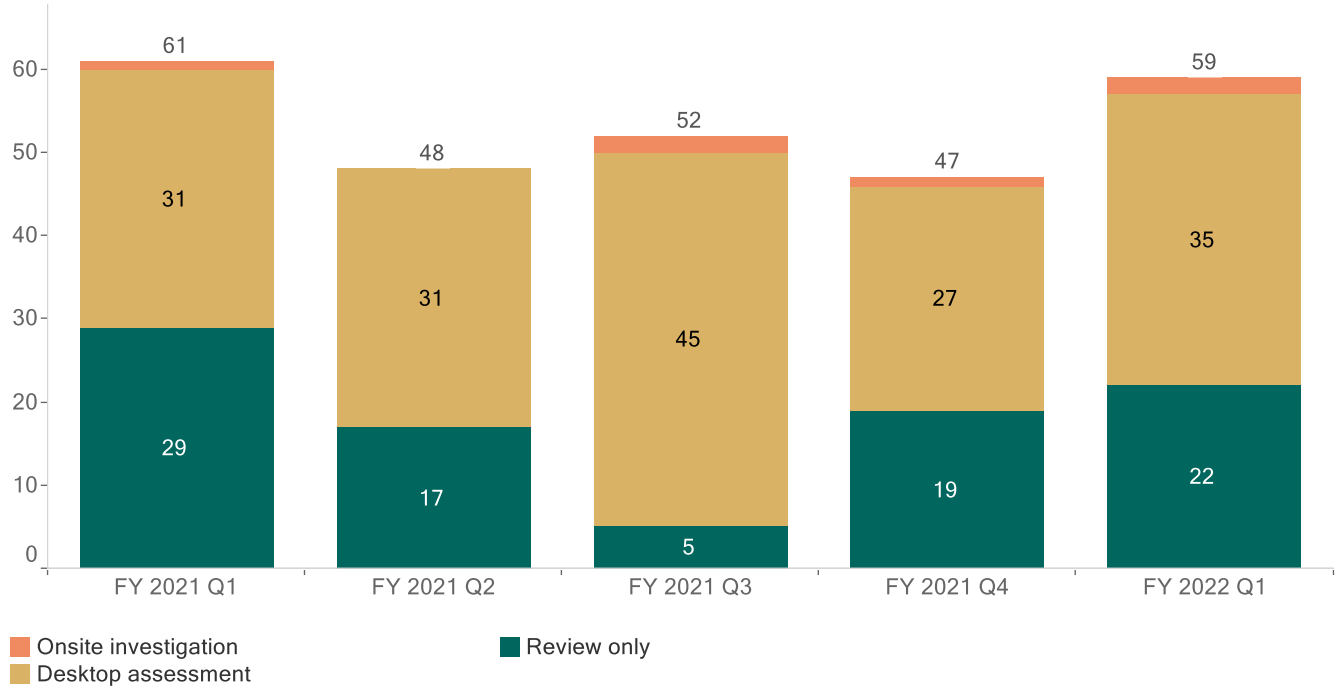


Our response to notified incidents involving FOMP

As part of the Regulator's position paper on preventing fires on mobile plant, all fires that occur on mobile plant are preventable. For each incident reported it is assessed and the outcomes reviewed. This involves an inspector attending the mine (onsite investigation) or a review of the investigation findings and actions (desktop assessment).

Figure 8 shows that for this quarter there were two onsite investigations conducted in response to notified incidents involving fires on mobile plant. The number of desktop assessments conducted has increased this quarter from 27 to 35, representing a 30% increase. Reviews of FOMP incidents have increased from 19 reviews to 22 reviews.

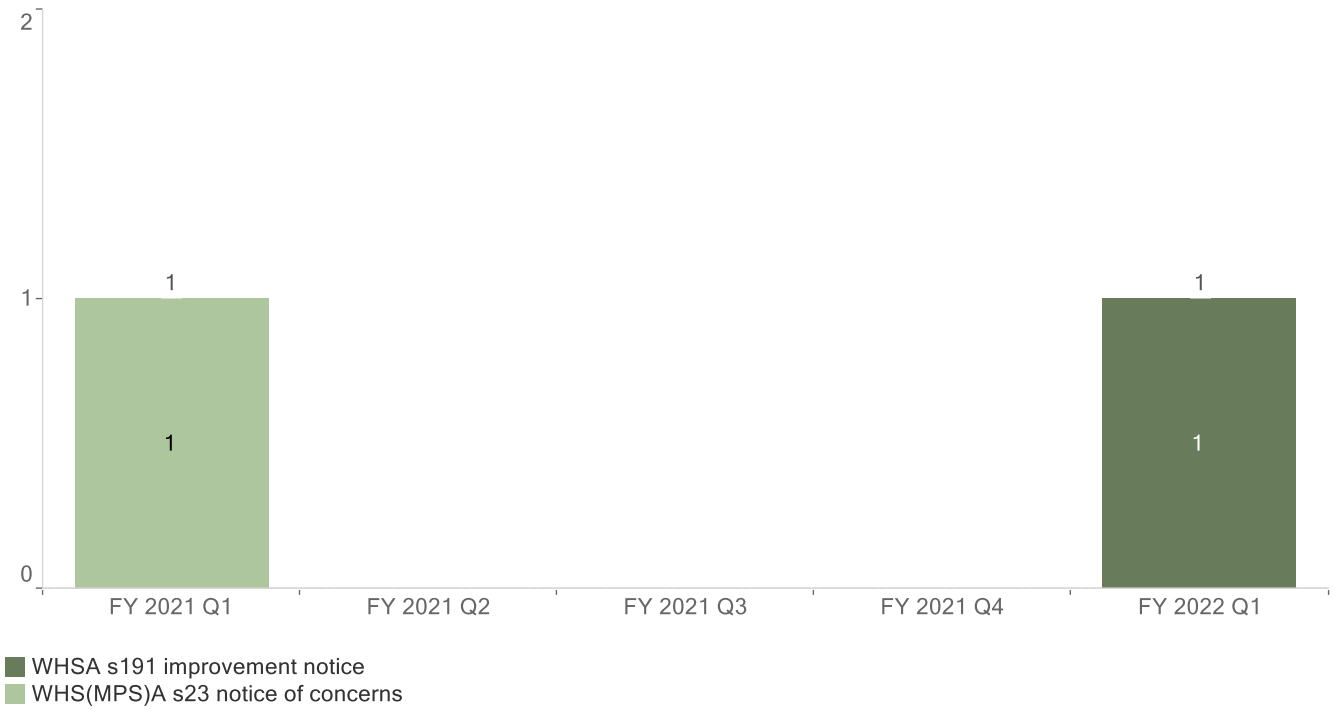
Figure 8: Notified incidents by response level between 1 July 2020 and 30 September 2021



Notices issued

As part of the Regulator's position paper on preventing fires on mobile plant where a mine operator has not taken appropriate steps to manage the risk of fires on mobile plant, escalated enforcement action will be taken. Figure 9 shows that one notice was issued in relation to notified incidents involving FOMP this quarter.

Figure 9: Notices issued in relation to FOMP incidents between 1 July 2020 and 30 September 2021



Fires on mobile plant ancillary reports

When an incident involving fires on mobile plant is notified to the Regulator, additional information, known as an ancillary report, must be submitted via the Regulator Portal no later than 30 days after the incident was required to be notified.

At the time of this report, 58 ancillary reports had been received, with one ancillary report outstanding.

Ancillary reports – combination heat/fuel sources

Data for heat sources and fuel sources for FOMP notifiable incidents this quarter indicate that the turbo heat source category and engine oil fuel source category combined for eight out of 58 incidents (14%) recorded in ancillary reports. The second most common combination this quarter was exhaust system and hydraulic oil, accounting for seven out of the 58 incidents (12%).

Figure 10: Ancillary reports - fuel sources combined with heat sources, between 1 July 2021 and 30 September 2021

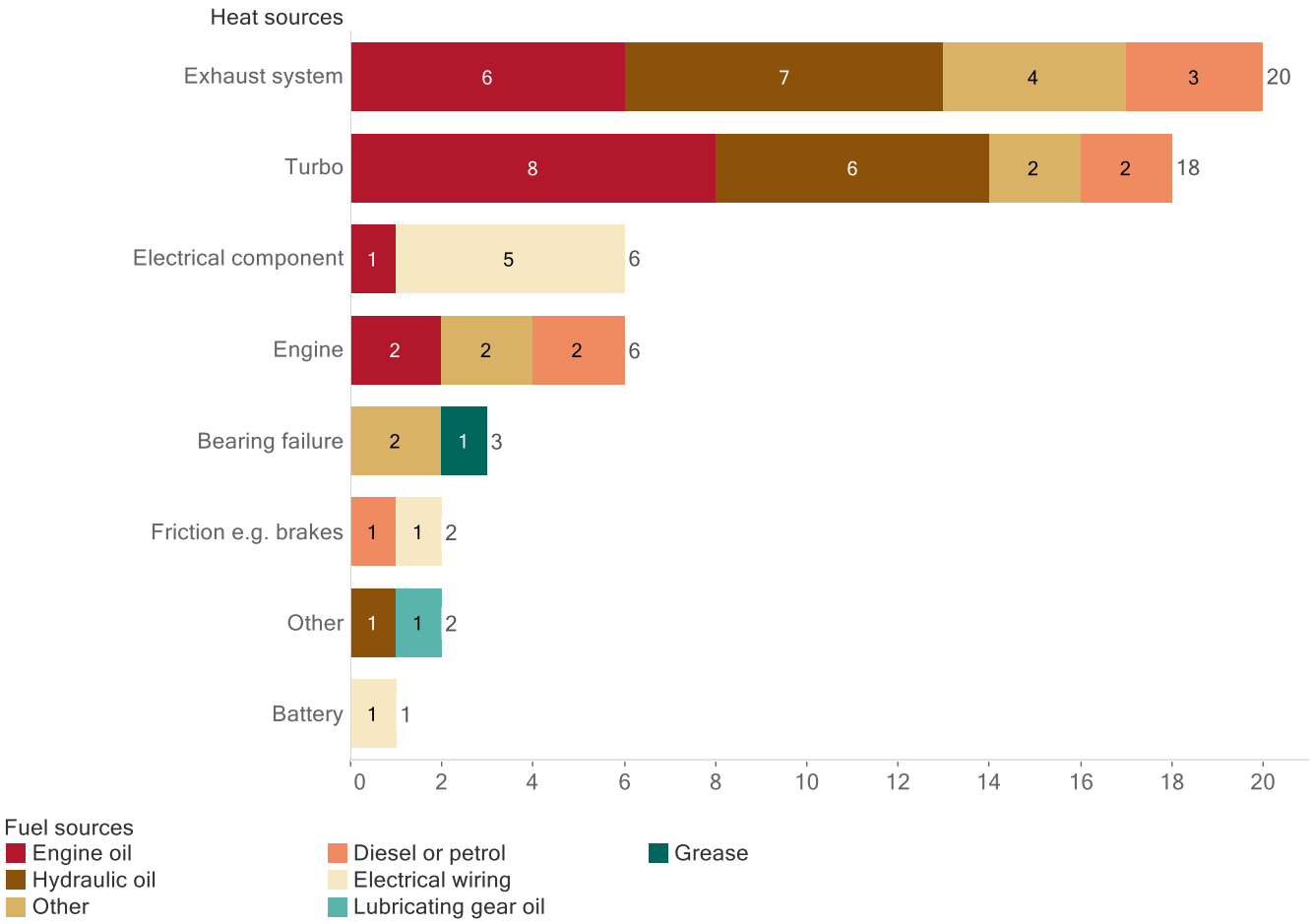


Table 2: Ancillary reports – fuel sources combined with heat sources, between 1 July 2020 and 30 September 2021[1]

HEAT SOURCE + FUEL SOURCE	FY2021 Q1	FY2021 Q2	FY2021 Q3	FY2021 Q4	FY2022 Q1	GRAND TOTAL
Turbo + engine oil	10	8	8	4	8	38
Electrical component + electrical wiring	7	6	6	6	5	30
Exhaust system + hydraulic oil	8	4	3	5	7	27
Turbo + hydraulic oil	6	3	4	3	6	22
Exhaust system + engine oil	3	3	2	7	6	21
Exhaust system + diesel or petrol	4		3	2	3	12
Exhaust system + other	2	4	1	1	4	12
Turbo + other	2	1	4	3	2	12

[1] 10 or more incidents since 1 July 2020

Ancillary reports – extinguished by

Figure 11 shows that a handheld fire extinguisher remains one of the highest recorded methods of extinguishment. The second highest method of extinguishment this quarter was recorded as a manually deployed fire protection system, recorded in 16 notified incidents of fire on mobile plant.

Figure 11: Ancillary reports - extinguished by, between 1 July 2021 and 30 September 2021

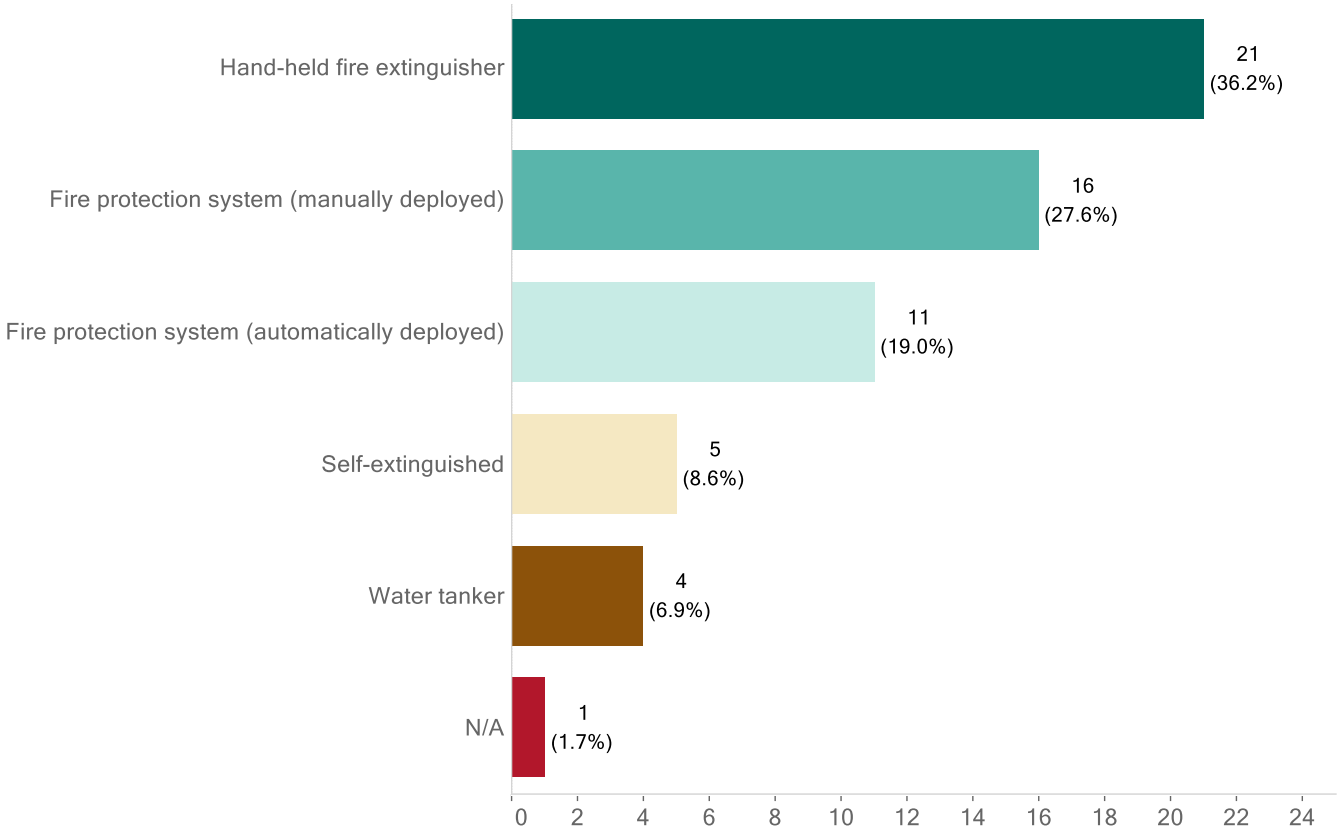


Table 3: Ancillary reports – extinguished by, between 1 July 2020 and 30 September 2021

EXTINGUISHED BY	FY 2021 Q1	FY 2021 Q2	FY 2021 Q3	FY 2021 Q4	FY 2022 Q1	GRAND TOTAL
Handheld fire extinguisher	26	17	21	20	21	105
Fire protection system (manually deployed)	12	17	15	11	16	71
Fire protection system (automatically deployed)	6	4	3	6	11	30
Self-extinguished	3	5	5	5	5	23
Water tanker	3	4	4	2	4	17
Other	7	1	3	3	-	14
N/A	3	-	-	-	1	4
Did not extinguish	-	-	1	-	-	1

Ancillary reports - failed component

This quarter there has been an increase in notified incidents occurring where the hose was listed as the failed component (from nine to 12), with the hose being the most common single failed component since FY 2020 Q2.

The category of 'other' as a failed component has increased from nine incidents last quarter to 14 incidents this quarter. The Regulator is currently conducting a review of incidents in which the failed component is listed as 'other' in an effort to reduce future FOMP incident notifications with this category.

Figure 12: Ancillary reports - failed components, between 1 July 2021 and 30 September 2021

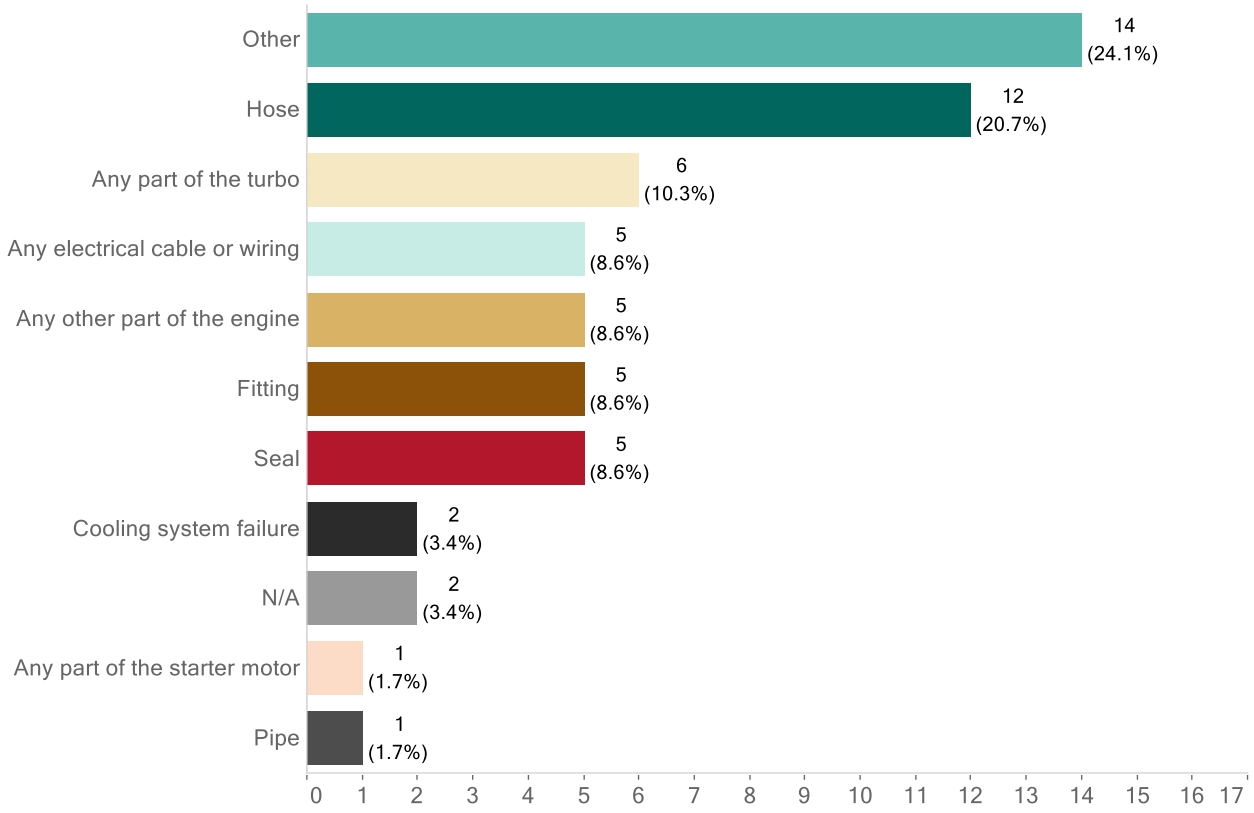


Table 4: Ancillary reports – failed component, between 1 July 2020 and 30 September 2021

FAILED COMPONENT	FY 2021 Q1	FY 2021 Q2	FY 2021 Q3	FY 2021 Q4	FY 2022 Q1	GRAND TOTAL
Other	20	10	5	9	14	58
Hose	13	9	14	9	12	57
Any electrical cable or wiring	6	5	8	7	5	31
Any part of the turbo	8	6	5	6	6	31
Seal	4	2	5	3	5	19
Any other part of the engine	2	4	2	4	5	17
Fitting	1	3	4	3	5	16
Pipe	2	2	3	1	1	9
Any part of the braking system	1	4	1	2	--	8
Any part of the starter motor	1	1	1	2	1	6
Cooling system failure	--	1	2	--	2	5
Transmission or drive chain	2	--	1	--	--	3

Ancillary reports - combination failed component and cause of component failure

The most common combination this quarter was ‘other’ and ‘other’, with ten notified incidents out of 58 (17%) noting this combination. These categories may be recorded as ‘other’ for several reasons including human errors or uncategorised component failures. The Regulator is currently conducting a review of incidents in which failed components and cause of component failure were listed as ‘other’ in an effort to reduce the instances of this grouping.

The failed component ‘hoses’ combined with ‘other’ as the cause of component failure combined for five out of 58 incidents (9%).

Figure 13: Ancillary reports - failed component and cause of component failure, between 1 July 2021 and 30 September 2021

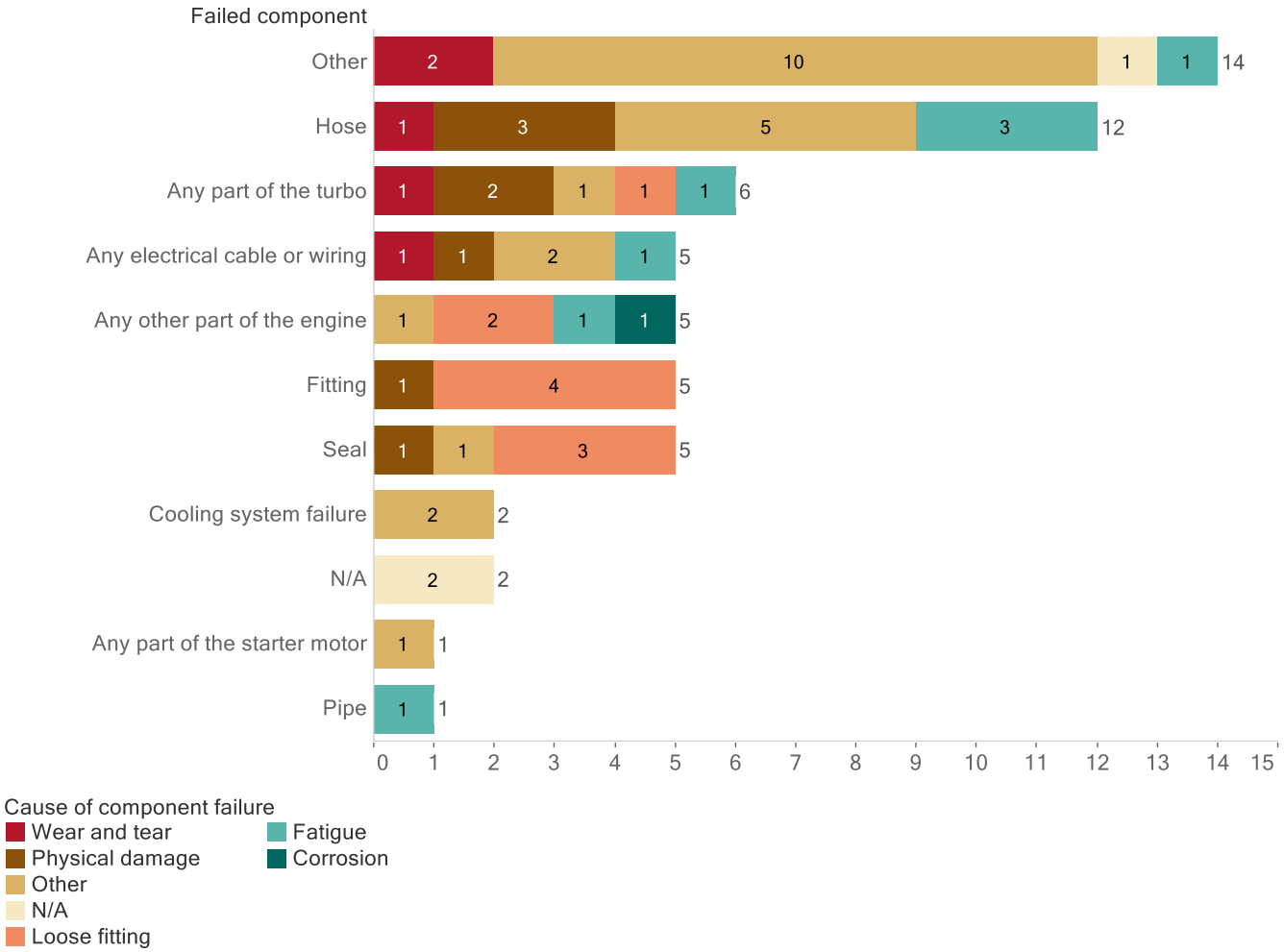


Table 5: Ancillary reports - failed component and cause of component failure, between 1 July 2020 and 30 September 2021[2]

FAILED COMPONENT + CAUSE	FY 2021 Q1	FY 2021 Q2	FY 2021 Q3	FY 2021 Q4	FY 2022 Q1	GRAND TOTAL
Other + other	12	7	5	8	10	42
Hose + wear and tear	4	4	6	4	1	19
Any electrical cable or wiring + other	2	2	2	4	2	12
Hose + physical damage	2	2	2	3	3	12
Any part of the turbo + fatigue	4	3	2	1	1	11
Hose + fatigue	1	2	2	2	3	10
Hose + other	4	-	1	-	5	10
Any electrical cable or wiring + wear and tear	1	1	3	3	1	9
Any part of the turbo + other	2	2	1	3	1	9
Fitting + loose fitting	-	2	2	1	4	9

[2] 9 or more incidents since 1 July 2020

Incident details

The information in the table provides a brief summary of the incident and the reported apparent cause.

DESCRIPTION	APPARENT CAUSES
The operator of a Caterpillar 16M grader at an open cut coal mine was returning to the workshop for repairs due to a circle drive fault when they noticed smoke exiting the engine bay in rear view mirrors. The operator stopped and inspected machine, then discharged the fire suppression system. The machine had operated for one SMU hour since rebuild was completed.	Paint on the engine exhaust manifold and/or machine oil residue coating stainless mesh used to manufacture lagging produced a hot flammable gas which ignited external to the exhaust blankets (at the joint).
An operator of a Liebherr 9100 Excavator at an open cut coal mine had the engine shut down and the fire panel alarmed followed by the fire suppression system automatically activating. The operator then identified residual smoke coming from the engine compartment. The operator activated the site emergency, inspected the engine bay, saw no flames and then egressed from the machine using the main boarding ladder. On inspection it was identified there was a fire on the machine however the automatic fire suppression system effectively extinguished the fire. Investigation has identified a high-pressure fuel line has ruptured causing atomised diesel to contact the engine and ignite.	Investigation has identified a high-pressure fuel line has ruptured causing atomised diesel to contact the engine and ignite.
The operator of a Sandvik LH621i Loader at an underground metalliferous mine was loading a truck at the 4425 level when the operator lost steering on the loader. The operator parked the machine to investigate the fault and observed a small flame in the engine bay. The operator activated the machine fire suppression system and used the machine fire extinguisher to finally extinguish the flame.	Failure of main steering supply hose has allowed for hydraulic oil to be sprayed onto a hot engine component.

DESCRIPTION	APPARENT CAUSES
An operator of a Caterpillar D11T at an open cut Coal Handling and Preparation Plant (CHPP) was operating on the stockpile when they observed white gas emanating from the engine compartment which he believed was A/C gas. The operator reversed the dozer back to a level area of the stockpile and shut the machine down via the normal process so to investigate the source of engine compartment gas. They exited the left-hand side of the cabin and immediately noticed smoke and a small flame around the left-hand side turbocharger.	Cyclic fatigue failure of a Caterpillar D11T auxiliary fan pump pilot hose (P/N 345-8870).
At the surface of an underground coal mine operators noticed smoke coming from a mobile air compressor that was in use supporting surface borehole drilling operations. On investigation operators found a small fire on the sound-suppression material near compressor engine exhaust.	Hole in exhaust muffler box has allowed hot exhaust gasses to start localised sound suppression material on fire.
The operator of a Caterpillar 994 front end loader at an open cut coal mine was traveling along a haul road when they were notified by a person in another vehicle following behind that there was excessive smoke coming from the RHS exhaust stack. The operator lowered the bucket, shut down the machine and applied the park brake. The operator then opened the engine bay door and saw two tiny flames near the turbo lagging. He went to get a fire extinguisher but it was not required as the flames self-extinguished.	Failure of the compressor wheel inside the turbo.
The operator of a Letourneau L1850 front end loader at an open cut coal mine was preparing the drill area floor and windrows when they noticed smoke emitting from the front articulation area. The operator repositioned the loader to an accessible position and shut down the machine. On further inspection of the area the operator identified that the smoke was	Residual coal and hydrocarbons within the articulation sub floor had ignited adjacent to L/H wheel motor vent outlet.

DESCRIPTION	APPARENT CAUSES
increasing and activated the manual fire suppression system.	
The operator of a Caterpillar 789C haul truck at an open cut coal mine saw flames around the deck visible from the driving position. The fire suppression appears to have put the fire out sufficiently for the operator to leave the cabin.	Initial inspection appears to indicate crankshaft failure of the engine. The failure of the engine internal components damaged the engine block releasing the engine oil which came into contact with hot engine components and igniting.
The operator of a Hitachi EH5000AC rigid dump truck at an open cut coal mine was leaving the lower south base lift dump when an AC fault and alternator temp alarm came up on the truck. The operator parked the truck up fundamental and was in progress of contacting maintenance when another truck called an emergency and could see sparks, flames and orange glow coming from below the Hitachi rigid dump truck. The operator of the Hitachi rigid dump truck then set off the fire suppression and used the emergency ladder to exit the truck. The water truck attended the scene. A handheld fire extinguisher and the fire hose from the water cart were used to extinguish the fire.	Insufficient greasing and possible contamination have caused the bearing to fail. The subsequent friction has resulted in the bearing overheating and becoming the ignition source.
The operator of a Volvo 180G front end loader at an open cut sand mine had parked up the machine and it was in idle down mode when they noticed blue smoke coming from the engine bay. The operator opened up the engine bay to have a look and could see a small flame coming from the AC drive belt. The flames were put out with a fire extinguisher.	Air conditioning unit had ceased up due to bearing failure.
The operator of a Caterpillar 775F service cart ST670 at an open cut coal mine has pulled up to the North fuel farm to refill the fuel and hydrocarbon tanks. After parking the service cart, the operator walked to the rear of the	Failed solenoid overheated and melted. Possible ignition of rubber/plastic casing.

DESCRIPTION	APPARENT CAUSES
plant and opened the LHS module compartment to access the fill panel. Upon opening the compartment, they have seen a small amount of smoke coming from behind the control panel and reported a visible orange glow.	
The operator of a Caterpillar D11T Dozer at an open cut coal mine noticed smoke from the left side of the engine bay. The dozer operator immediately parked the machine, activated the fire suppression system, called emergency and used the onboard fire extinguisher to extinguish the fire.	Hydraulic hose was worn by contacting fire system hose. The hydraulics hose then failed, releasing oil into the engine bay and onto the turbo where it ignited.
The operator of a Liebherr 996 excavator at an open cut coal mine noticed a small fire on the turbo of power pack 2 on the machine's camera. The operator parked up the machine, shut it down and activated the fire suppression system. The fire was extinguished by the operator of the machine using a handheld extinguisher and the on-board fire suppression system.	Oil feed line inner PTFE hose melted (not observable in service as it is sheathed within a stainless steel braided protective outer sheath). Routing of turbo feed line inside of heat lagging (leading to increased ambient temperature around the hose).
The operator of a Epiroc M2D development drill rig (Jumbo) at an underground metalliferous mine was boring at the face when they noticed a small fire. The operators used hand-held fire extinguishers on the fire. The sites emergency response system was activated, and workers retreated to fresh air chambers.	The compressor oil over temperature cut out switch has failed to de-energise the Y171 solenoid, this has allowed the compressor to continue to run, overheating the oil. This has caused a catastrophic failure of the oil sight gauge allowing the hot oil to escape.
The operator of a Hitachi 5500 excavator at an open cut coal mine was tramming to another part of the pit when a haul truck operator observed a small fire originating from a track roller on the RHS track. The truck operator called the excavator operator to stop. The flame self-extinguished a short time later. A water cart was called to the incident scene. It was later used to cool down the roller. It was not required to extinguish or fight the fire.	The track frame load roller bearing housing incurred a premature mechanical failure, rupturing the external contamination seal. This has resulted in the ejection of approximately 6.5 litres of hydraulic oil which was ignited on the carrier roller bearing.
The operator of a Caterpillar D10T dozer at an open cut coal mine parked up the machine at	Hydraulic pilot filter mounts, located in the RHS rear of engine bay, failed allowing filter housing to drop

DESCRIPTION	APPARENT CAUSES
the end of dayshift on the dump. The operator shut the machine down and exited the area in their LV. Approximately 30 minutes later, maintenance personnel working on the shutdown pad noticed some smoke and flames on the dozer and initiated the emergency response. Water carts arrived on the scene and extinguished the fire.	onto exhaust and caused threaded section of housing to crack and allow hydraulic oil to contact the exhaust.
The operator of a Caterpillar 793D dump truck at an open cut coal mine had picked up the truck after a fan hose oil leak had been repaired in pit. The operator was driving to the ROM to tip off a load when they saw steam and smelt oil from what they believed had been from an earlier oil leak that had been repaired and washed down with a water cart. The operator continued driving and the steam appeared to get thicker. The operator contacted a truck that was following and asked if they could see any issues and they replied 'no'. The open cut examiner overheard the conversation and requested the truck pull into the stockpile/main pit. The truck was inspected and a small flame was observed in the engine bay. An emergency was called and fire suppression system was manually activated. The fire suppression system extinguished the flames.	Possible flammable oil residue within engine bay from previous oil leak not cleaned up to standard.
At an open cut quarry whilst operating the IVECO acco 2530C water cart. a hydraulic line burst and sprayed oil onto the turbo causing smoke and a small localised fire to start. The operator shut down the water cart and called an emergency. The operator grabbed a fire extinguisher, but the fire had extinguished itself before he could use the fire extinguisher.	The hydraulic valve block failed causing hose to burst. Hydraulic oil then sprayed onto the turbo causing ignition.
The operator of a Caterpillar D10T dozer at an open cut coal mine left the workshop go-line after maintenance and walked out to main pit where they stopped and waited for their	The left-hand side engine's centre valve cover gasket/seal was found to be damaged allowing oil to leak onto the exhaust system causing it to ignite. Rocker cover gasket failed as it was second hand.

DESCRIPTION	APPARENT CAUSES
supervisor to provided further instruction. Whilst talking to the supervisor, the dozer shut down automatically and the fire system went off. The operator called an emergency over the two-way and exited the dozer safely. The operator then waited for the water truck which stayed at the scene on standby.	
The operator of a Hitachi B50D lube cart at an open cut coal mine picked the machine up after it had been down for maintenance repairs, refuelled it and proceeded to the mine's hard stand. When pulling up at the hard stand the operator noticed dark smoke coming from under the hood. They lifted the hood and saw flames on the LHS of the engine. The operator grabbed the nearby extinguisher and gave the fire three hits, but it kept reigniting. The fire suppression system was manually activated and an emergency called.	Hydrocarbon contamination of the LHS exhaust manifold lagging. Hot exhaust manifold has ignited residual hydrocarbons.
The operator of a fully loaded Liebherr T282 haul truck at an open cut coal mine crested the haul road ramp at 35 km/h and continued on down the ramp rather than turning at the intersection. The truck gained speed quickly and the operator applied the retard brake at 100%. The speed of the truck was outside of the retard envelope for this brake to operate effectively. The truck continued to gain speed to approximately 55 km/h and the operator applied the service brake and brought the truck to a stop. The operator contacted maintenance who attended. During inspection smoke was observed emitting from the axle box. When the access door was opened a fire was observed inside. The fire suppression system was activated, and a handheld fire extinguisher was also used to extinguish the flames.	The operator did not engage the service brake as per the Original Equipment Manufacturers (OEM) method being of a single firm application bringing the machine to a stop as quickly and safely as possible. The incorrect application of the service brake in this event has overheated the braking system and caused the axle box fire.
An operator at an open cut coal mine was at a transtank (in pit fuel farm) refuelling a	Potentially a non OEM seal on the fuel tank refuelling cap.

DESCRIPTION	APPARENT CAUSES
Caterpillar 16m grader when fuel began to overflow from out of the top of the tank. The operator disconnected the fuel hose from the grader then noticed smoke at the top of the tank before seeing flame. The operator entered the graders cabin to call an emergency and the fire system automatically activated. The worker proceeded to extinguish the fire with a water hose and a fire extinguisher.	
A Hitachi B50D lube cart at an open cut coal mine was being operated with the assistance of a fitter who was monitoring the machine for an intermittent oil leak on the transmission oil cooler. The operator detected smoke and stopped the machine. On inspection of the machine an oil leak was found, with oil on the ground. The OCE and Breakdown Co-ordinator were contacted and discussed a plan to return the machine to the workshop with a water cart following. During this trip the water cart operator noticed a glow from under the bonnet. The lube cart was parked fundamentally stable against a windrow and shut down. A small fire was discovered under the bonnet and the water cart's cannon was used to extinguish it.	Leaking banjo fitting at turbo oil feed line allowed engine oil to escape onto the turbo, causing ignition.
On the ROM stockpile of an open cut coal mine an operator of a Caterpillar 992K front end loader was feeding coal into the CHPP bypass ROM bin when they noticed flames on the right-hand side of the engine. The operator stopped the loader and the fire suppression system discharged automatically, shutting down the engine and suppressing the fire. The operator raised an emergency and dismounted the loader to ground level. The RH side air filter was on fire and was not covered by the automatic fire suppression system, flaring up when the operator was on the ground. A fire hydrant and hoses were used to control the fire. Two water carts were dispatched to the scene and completed extinguishing the fire.	Loose fitting on fuel supply line to fuel transfer pump on top of engine has allowed fuel to run down and contact exhaust manifold, resulting in a fire. The fire has impinged on the RH air filter box eventually melting it and igniting the paper element filters inside.

DESCRIPTION	APPARENT CAUSES
The operator of a Caterpillar 24M at an open cut coal mine was driving between a ramp and dump when they noticed the machine loose power followed by smoke coming from the exhaust. When they saw flames, they stopped the machine and called emergency, activated the fire suppression and exited the grader.	Failed turbo shaft due to a lack of lubrication by a restricted cooling circuit. The cooling circuit becomes restricted due to the overheating of engine oil during a hot shut down. The heat oxidises the engine oil and forms a viscous (gumming/tar) solid which caused the restriction.
An operator was feeding trees into a Van Gelder log grinder with an excavator at an open cut coal mine when they noticed the fire suppression of the machine had discharged. They exited the excavator, saw flames then returned to the excavator to raise the emergency. Handheld fire extinguishers, moxy water cart, and a mobile firefighting trailer were used to extinguish the fire.	Fuel water separator became detached from the fuel filter housing causing diesel fuel to spill. While the machine continued to operate, the diesel fuel continued to spill under pump pressure.
The operator of a Volvo L120E Integrated tool carrier at an underground metalliferous mine was driving underground when they noticed steam coming from the engine bay. They pulled over to investigate and noticed a small flame. The operator activated the fire suppression system.	The engine has overheated which has caused the coolant to spill out of the header tank and onto the hot components. Coolant has evaporated and left behind flammable residue which ignited due to heat.
The operator of a Sandvik TH663 UG haul truck at an underground metalliferous mine was driving up the main decline and noticed smoke coming from the engine bay. The driver put the haul truck nose first into the stockpile bay and manually activated the fire suppression system. The driver then used a handheld fire extinguisher into the engine bay, but apparently did not see flames.	Incorrect sump plate supplied on new engine cracked. Oil has leaked out coming into contact with the engine exhaust pipe and igniting.
The operator of a Hitachi B50D lube cart at an open cut coal mine was travelling along a haul road when they thought they saw a reflection of flames. The operator stopped the machine and observed flames from under the bonnet. They manually activated the fire suppression and	Connection type utilised (pipe to banjo bolt) not suitable for this application, leading to continual failure of the banjo joint at the LHS turbo oil feed pipe. Oil leak from feed pipe has contacted hot surfaces leading to fire event.

DESCRIPTION	APPARENT CAUSES
observed some residual flame. The operator extinguished this with a fire extinguisher.	
The operator of a Komatsu 830E DC haul truck at an open cut coal mine was unloaded and travelling up south ramp when they lost propulsion and a D1 electrical fault came up. The operator stopped the truck and reported the incident to the supervisor. The operator attempted to move again. When the truck lost propulsion, the operator saw smoke and smelt an electrical heating smell. The operator safely parked and shut down the truck via the emergency stop. A short time later an electrician arrived and opened the truck RP cabinet where a small fire was observed within the cabinet. The fire was extinguished using a handheld DCP extinguisher.	DC electric drive truck operating on a rough road has caused the RP 6 Retard Contactor to bounce (uncommanded close) resulting in electrical system overcurrent and subsequent fire within RP Cabinet.
The operator of a Caterpillar 793D haul truck at an open cut coal mine parked in the hot seat bay and exited the truck to swap operator and go to crib. The on-coming operator has noticed smoke in the cab when entering the truck. On closer inspection, a small visible flame was identified behind the dashboard. The operator enacted the site emergency response process and extinguished the flame with an extinguisher.	The ladder systems LED down indicator light within the dash shorted internally.
The operator of a Caterpillar D10T dozer at an open cut coal mine was doing clean-up for an excavator when the fire alarm sounded. The operator observed a red flare and then a flame from the front centre top of the bonnet. While the operator was reversing the dozer out of the way, the fire system activated, and the dozer stopped. The fire was fully extinguished.	Metal fuel line 442-4688 rubbed on p-clamp bolt causing fuel line to rupture. P-clamp has been installed to segregate an OEM hose which was routed above the fuel line, and a harness that ran to a circuit breaker for the alternator as part of a DPO e-stop installation.
An Allight Sykes diesel dewater water pump that was mounted on a skid plate was being towed by a loader down a ramp at an open cut coal mine when diesel has spilt from the fuel tank of the pump onto the skid plate. The friction has	The pumps fuel cap camlock fitting came loose through vibration when the pump was transported around site on a skid.

DESCRIPTION	APPARENT CAUSES
then caused a small fire. The loader operator put out the fire with a handheld fire extinguisher.	The fuel tank surge pipe is not long enough to contain the diesel during the transport downhill. The diesel that escaped contacted the hot surface of the skid that the pump was transported on and started a fire.
The operator of a Caterpillar 793C dump truck at an open cut coal mine was driving up a ramp when the truck lost power. They looked in the RHS rear view mirror and saw flames coming out the exhaust. The operator shut the truck down, called emergency on the two-way radio and manually activated the fire suppression system. The operator lifted the engine cover and noticed there was flame at the RHF turbo. The flame was extinguished with handheld fire extinguishers.	Investigation found that the turbo shaft failed causing the rotating components to seize. As a result of the shaft failure, lubricating engine oil was released into the exhaust system and ignited. Some residual oil also escaped onto the external surface of the turbo.
The operator of a Caterpillar D11T dozer at an open cut coal mine was working in rehabilitation and had parked the machine and exited the cabin to clean their windows. After re-entering the cabin the operator observed smoke emitting from the engine bay. Upon further investigation flames were also observed. The fire suppression system activated and shut down the machine automatically. The operator then called the emergency and confirmed the fire suppression system had deployed by manually activating the system and then left the cabin. The water cart was used to cool the engine bay and ensure the fire was not able to re-ignite.	Upon inspection of the fuel injectors and injector sleeves, there was evidence of the injector bottom o-ring on two injectors had deteriorated to the point that they would not seal the fuel system port in the cylinder surrounding the injectors. There was also evidence of washing of the inside of the two injector sleeves from fuel, with evidence of fretting of the o-rings on the injectors sleeves which was the likely the entry point of fuel entering into the cooling system. The fuel pressure in the cylinder head is greater than the cooling system pressure and fuel was overfilling the cooling system to the point of it over pressurising the relief in the cooling system at the cap. Coolant and diesel mixture were leaking from header tank cap and discharging from the outlet relief hose which ended in the engine bay. This created fuel and coolant mixture to circulate in the engine bay area. With the heat of the exhaust, air flow in the engine bay and fuel circulating has ignited and burnt the L/H engine intake tube and surrounding components.
The operator of a Caterpillar R2900 underground loader at an underground	Engine cover strut appears to have contacted the positive power cable running to the starter motor

DESCRIPTION	APPARENT CAUSES
metalliferous mine has noticed sparks from beneath the engine bonnet and has stopped and investigated. A small fire was discovered, and the operator manually activated the AFFF fire suppression system to extinguish the flame.	causing initiation and combustion of wiring insulation in immediate area.
The operator of a Sandvik DR460 drill rig at an open cut coal mine smelt diesel fuel from the cabin. The operator exited the cab and observed a small flame at the top rear of the engine. They grabbed a 9 kg powder extinguisher from outside the cab and fully extinguished the fire.	A loose fuel line fitting. The drill had been serviced earlier that day. The fuel fitting had been loosened at the end of the service to bleed air from the fuel system. The maintainer re-tightened the fitting and ran the engine for 1 hour without leaks.
The operator of a Hitachi EX8000-6 excavator at an open cut coal mine was operating in the ramp area when the operator noticed the fire detection system alarming on detection 2 (IR Cameras). The operator ceased operation and attended the right-hand engine bay to investigate. The operator observed flames on the right-hand engine and left-hand rear turbo. The operator went back to the cab, called anemergency via the two-way, shut the engine down, accessed a handheld fire extinguisher and successfully extinguished the flames.	Failure of the cartridge separating hot and cold side of turbo allowing oil to leak and soak into the turbo blanket.
The operator of a Caterpillar D11T dozer at an open cut coal CHPP was on the product stockpile adjacent to the coal valves. The operator was completing bulk push at the coal valve. While reversing they observed blue smoke coming from the LHS engine compartment. The operator reoriented the dozer, shut down the dozer and initiated the emergency management procedure.	Failed o-ring part # (1P3705) on the high-pressure hydraulic screen has allowed oil to leak onto the exhaust system and ignite.
The operator of a Caterpillar 793D haul truck at an open cut coal mine observed flames in the muffler box. The operator stopped the truck, initiated the site's emergency procedure and activated the fire suppression. The fire suppression system did not extinguish the fire due to there being no fire suppression nozzles inside the muffler box. The operator utilised the	The fire initiated due to an exhaust leak from the flange between the primary muffler and the muffler mid-pipe. During operation the flange has become misaligned as it was not adequately restrained or located by the v-band style clamp. This allowed exhaust gasses to leak onto sound suppression

DESCRIPTION	APPARENT CAUSES
machine mounted extinguisher located at the cab of the machine and also the extinguisher located on the front bumper to attempt to extinguish the fire. However, due to the location of the fire being inside the muffler box, the attempt was unsuccessful. A water cart was then used to successfully extinguish the fire.	media in the muffler box until it was hot enough to ignite.
A service person at an open cut coal mine had gone to fuel up a Liebherr R996 excavator while the operator went to crib. The operator stated to the serviceman that the low coolant alarm had gone off as the machine had been shut down. The operator left the machine and the service person ascended the ladder and entered the engine room. The service person could see some smoke and smelt a burning smell while they stood at power pack two. As they looked around power pack two they could see across to power pack one and saw a flame near the turbos on power pack one. The service person went straight up to the cab to set off the onboard fire system and raise the emergency.	Apparent cause unable to be determined. No evidence of fire or failed equipment components could be identified when inspections took place after the event.
The operator of a Sandvik DP55 drill at an open cut coal mine was lowering the mast to remove dirt from the dust hood when they identified hydraulic oil spraying from the left-hand mast raise cylinder fitting. The operator identified a small fire on top of the engine, called emergency and activated the fire suppression system and proceeded to extinguish the flame on top of the engine with a handheld DCP extinguisher.	The left-hand mast raise cylinder lower pin has failed due to fatigue, allowing the cylinder to move and damage a hydraulic hose. The hydraulic hose has then failed which has sprayed atomised oil into the engine bay.
The operator of a Caterpillar D11T at an open cut coal CHPP was pushing raw coal into a valve on the raw coal stockpile when an oil leak has developed on the L/H side of engine. The operator relocated the dozer away from the stockpile to the park up bay. Once stationary, the operator noticed flames emanating from the engine bay so immediately shut down the dozer	Investigation has identified the hydraulic hose had not been run back through the retaining clamp and had been rubbing. The hydraulic hose failed and directed an oil spray towards engine exhaust components which ignited.

DESCRIPTION	APPARENT CAUSES
and activated the fire suppression system which extinguished the fire.	
The operator of a Sandvik TH663i UG haul truck at an underground metalliferous mine was parked for a couple of minutes waiting to decline to a lower level to get their next load. The operator went to decline to the next level when they noticed the fire suppression had activated. They called the supervisor and fitter then got out of the cab when they noticed a burning smell and saw some blue smoke.	Wire leading to the starter motor has rubbed through, causing positive wire to short to earth igniting the wiring insulation and oil around the back of the starter motor.
The operator of a Komatsu HD785-7 water cart at an open cut coal mine was watering the in-pit park up area. While idling towards the exit of the area, the operator heard a noise and the water cart suddenly stopped. A liquid was noticed spraying onto the passenger window as the operator shifted into neutral and applied the park brake. The operator left the cab and while walking around the cab to investigate, smelt oil and saw flames through the engine bay hatch. The operator then proceeded to activate the fire suppression system inside the cab and call emergency. The operator exited the cab, opened the engine bay doors, and saw a small fire around the turbos. The operator proceeded to extinguish the fire using a hand operated fire extinguisher.	Hydraulic hose within the brake actuation circuit underneath the cabin has failed, spraying hydraulic oil onto the cabin and in the engine bay. The oil was ignited on hot engine components in the vicinity of the turbos. The root cause was determined to be an aged hose that failed causing hydraulic oil to be sprayed onto the heated engine components.
The operator of a fully loaded Komatsu 930E rear dump truck at an open cut coal mine was hauling waste in the mine to a dump when flames were observed coming from the exhaust by a mining supervisor following behind the truck. The supervisor instructed the operator to park the truck fundamentally stable and to shut down and exit the truck. As the truck was being parked the fire suppression system discharged automatically. An emergency was declared by the mining supervisor. The operator exited the truck to ground level and walked away from the truck. The dual agent suppression system had	LHR LP turbo has failed internally when turbine impellor has contacted casing due to excessively worn bearings. Turbo casing has failed resulting in lubricating oil being sprayed over engine and igniting.

DESCRIPTION	APPARENT CAUSES
failed to extinguish the engine bay fire fully. It was ultimately extinguished by the supervisor and OCE using handheld DCP extinguishers through the side and top engine cover hatches.	
The operator of a Liebherr 9800 hydraulic excavator at an open cut coal mine was working loading overburden in the mine when the operator became aware of the smell of hydraulic oil. The clean-up dozer working close by confirmed that oil was pouring down from the machinery deck level. The operator shut down the machine and went to the engine house to investigate. They saw small flames on top of the turbo charger of the front engine. The operator activated the foam fire suppression system which extinguished the fire.	A hydraulic hose situated outside the engine compartment ruptured with the oil engineering the engine compartment and igniting when it made contact with the hot surface of a turbo. The hose burst adjacent to the end fitting swaging as a result of fatigue failure of the steel wire braiding. The hose that failed was planned to be changed out as part of a scheduled changeout for hoses at 10,000 hours based on the OEM recommendations. The maintenance management system was switched to a new system and the work order to change out the hose was lost, and the hoses were not replaced as planned. The hose failed at 15,541 hours.
The operator of a Caterpillar 793D haul truck at an open cut coal mine was hauling overburden material when they looked across the deck and noticed flames coming from the exhaust area. The operator called an emergency and parked fundamental off the side of the haul road and proceeded to use a 9 kg handheld fire extinguisher and successfully extinguished the fire.	The fire initiated due to an exhaust leak from the flange between the primary muffler and the muffler mid-pipe. During operation the flange has become misaligned as it was not adequately restrained or located by the v-band style clamp. The exhaust leak allowed exhaust gasses to leak onto sound suppression media in the muffler box until it was hot enough to ignite. The flange and clamp design has been identified to be inadequate to support the additional weight of the dual skin exhaust components compared to the OEM exhaust components.
At an open cut coal mine, workers noticed that water had stopped coming from the end of a pipe attached to an Allight Sykes XH150 diesel water pump during their inspections. While investigating the reason for the lack of water coming from a pump it was discovered that it was on fire. The workers extinguished the fire using a fire extinguisher.	An active 12V power cable was P-clamped to the main frame of the pump and has short circuited to ground, melting the cable. It is most likely the resulting heat from the melted cable has ignited the electrical insulation and plastic shielding, or the exposed copper wire has contacted the metal frame, causing arching and sparking which could have ignited combustible fluids in the area.
At an open cut coal mine, maintainers were carrying out run up commissioning checks on a	Paint on the manifold ignited while load testing a new engine at the commissioning stage.

DESCRIPTION	APPARENT CAUSES
Komatsu 830e1AC rear dump truck after an engine installation when a small fire occurred around the RHS exhaust manifold lagging. The mechanical tradesperson shut down the truck and extinguished the fire using a fire extinguisher.	Engine supply process includes painting the entire engine including the high temperature components.
The fire suppression system on a Komatsu PC5500 excavator at an open cut coal mine activated automatically and shut down the excavator. The operator raised an emergency, inspected the engine room and identified a small residual fire on one of the two engines. The excavator operator put out the remaining fire with a handheld fire extinguisher.	Engine oil leaked out of static timer control (STC) manifold. The leaked oil contacted hot exhaust components igniting. One of the manifold bolts was found to be loose. The O-ring seals were not able to retain the oil. Incorrect seals were used on the static timer control oil manifold (Din 2869 instead of OEM specified oO-ring type).
The operator of a Caterpillar 777G water truck at an open cut coal mine had been watering a ramp when flames became visible on the right-hand side of the machine. The operator turned the machine nose into a windrow, parked and exited the machine. The fire suppression system deployed automatically, and a water cart also attended.	The hoist pump to spray system sequence valve hydraulic oil hose had failed immediately behind the pump-end ferrule. The hydraulic oil spraying from the failed hose has contacted hot exhaust/turbo surfaces and ignited. The hoist pump – sequence valve hose failed primarily due to the tight bend radius immediately after the ferrule.
The operator of a Hitachi EH5000AC-3 rear dump truck at an open cut coal mine was heading off a dump unloaded when they saw smoke coming out of the RHS exhaust and then heard a loud bang followed by flame out the exhaust. The operator has rolled the truck into a nearby park-up area and shut the machine down before calling an emergency.	The inner lining of cylinder 13 has failed. This has allowed oil and coolant into the engine cylinder. The damaged liner has consequently damaged an exhaust valve which has allowed coolant and oil to discharge into the exhaust system.
An operator of a Hyundai 770 loader at an open cut quarry parked the machine up at the site's workshop and went to lunch. Approximately 30 minutes later the operator went outside and noticed a small fire in the engine bay of the loader. The operator put out the fire with a handheld fire extinguisher.	Cracked exhaust manifold discharging hot exhaust gas onto the high- and low-pressure air conditioner hoses causing them to burst discharging gas an oil onto the exhaust system and igniting.

DESCRIPTION	APPARENT CAUSES
The operator of a Caterpillar D11T dozer at an open cut coal mine relocated it from the workshop after maintenance to the main ROM and did approximately 30 minutes work then parked the dozer up and shut it down for crib. After dumping coal into the hopper, a truck operator saw potential smoke coming from the dozer. The operator called up on the two-way and reported it. The Open Cut Examiner (OCE) attended the main ROM and opened the engine bay door of the dozer and saw evidence of flames in the engine bay. The OCE then used a handheld fire extinguisher and put the fire out.	Engine oil was leaking from the centre rocker cover gasket area. The engine oil has leaked onto the exhaust manifold and ignited. The LHS engine centre rocker cover was found to be missing the lower centre bolt which prevent sufficient clamping and thereby sealing of the rocker cover.
The operator of a Caterpillar D11T dozer at an open cut coal mine was capping over-height material at a shovel when an oil leak has developed and sprayed across the L/H side of the engine and cabin windscreen. The operator relocated the dozer to an accessible position and shut down. On inspection of the engine bay, a small flame was observed and was suppressed with a fire extinguisher.	It was observed that the transmission filter cover o-ring had failed and directed an oil spray towards engine exhaust components. Transmission filter cover bolts became loose allowing the cover seal to lift from retaining groove and release oil under pressure whilst operating. The cover bolts were installed at a recent service. It was found that the blind holes receiving the bolts were not cleaned from residual oil and debris allowing a hydraulic lock to occur when bolts were tensioned.
A service person at an open cut coal mine was attending a Liebherr R994B excavator to refuel the machine as part of the normal refuelling schedule. During an inspection of the oil levels in the engine bay, the service person noticed a pool of coolant and a coolant leak coming from a hose. The coolant had leaked onto the turbo which had ignited, resulting in a small, visible flame being present. The service person initiated the site emergency response procedure and then put the fire out with a handheld extinguisher.	Coolant pipe has failed due to rubbing on a steel bracket. The leaked coolant has contacted the hot turbo resulting in ignition. The bracket which rubbed through the coolant pipe was redundant.
The operator of a Drilltech C75K5L blasthole drill at an open cut coal mine reported issues with the hydraulics. The operator reported to his supervisor and proceeded to remove the rod from the hole and trammed off the hole to	The root cause was found to be a significant buildup of mud and coal dust within the hydraulic compartment resulting in solenoid failure and overheating. The failed solenoid run continuously leading to overheating and ignition of adjacent fuel

DESCRIPTION	APPARENT CAUSES
inspect the machine. On machine inspection, they saw smoke and possible flames emitting from a closed hydraulic compartment. The operator activated the machine e-stop, initiated emergency response and disembarked safely. With the assistance of an operator on an adjacent drill, a fire extinguisher was discharged into the compartment.	sources (coal dust, electrical harness, hose mechanical covers).
A Hitachi EH5000 haul truck at an open cut coal mine caught fire whilst driving along on the haul road. The operator stopped the truck and exited. The truck was completely engulfed, and a 1 km exclusion zone was set up initially around it. Once all tyres were confirmed to be deflated by use of a drone, the truck was accessed by water carts. The water carts doused the truck and put out the remaining flames.	The apparent cause has not been finalised at the writing of this report. The mine has engaged a forensic investigator to assist with the investigation and to determine the apparent cause.

For further information refer to our dedicated Fires on mobile plant web page.

Annexure A

Changes to the duty to notify the Regulator

In February 2020, amendments to the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 saw a change to the duty to notify incidents involving fires on mobile plant to the NSW Resources Regulator.

In the definitions of 'high potential incidents' there was an additional incident added to clause 128(5):

> 128(5)(t) *an uncontrolled fire on mobile plant that is in operation (whether operated directly, remotely or autonomously)*

An uncontrolled fire on mobile plant is any fire or ignition that is not intended as part of the normal function of that item of mobile plant. This applies regardless of the level of damage or means of extinguishing the fire. Examples of fires and ignitions that are intended include internal combustion, flame heaters, such as on bitumen tankers, and maintenance works, such as welding and oxy cutting (unless control is lost during the task).

This clause also requires fires to be notified when they occur on autonomous plant operating without a worker present.

Any fire underground in a mine, including a fire on mobile plant, must still be reported as a dangerous incident under clause 179(b).

Where a worker or any other person is exposed to a serious risk to the person's health or safety from fire, the incident must be notified as a dangerous incident under clause 179(a)(ii).

For further information refer to the factsheet – Changes to Work Health and Safety (Mines and Petroleum Sites) notifications to the Regulator.