



Trade &
Investment
Mine Safety

NSW underground metalliferous mines **Fires on mechanical plant** Incident analysis

Five-year period

2008 to 2012

November 2013

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1 Introduction

In underground metalliferous mines, fires represent a significant proportion of all notifiable incidents reported by the mining industry to NSW Mine Safety.

For the period between 2008 and 2012, fires comprised approximately 25 percent of all notifiable incidents on mechanical plant. During this period there was an increase in the number of fires reported. This is disconcerting as any fire in an underground mine has potential to harm people from the fire itself or from the products of combustion.

This report analyses all notifications of fires on mechanical plant at underground metalliferous mines in the five years from January 2008 to December 2012, as recorded in the NSW Trade & Investment Mine Safety COMET database (COMET).

Appendix B provides details on incident notification legislation and Appendix C provides more information on each reported incident.

This report is a sequel to previous analysis of fires in 2000 and 2007, see <http://www.resources.nsw.gov.au/safety/publications/statistical-publications>

2 Summary

Uncontrolled explosions and fires represent a significant proportion of all notifiable incidents reported to Mine Safety by the NSW mining industry. Since 2008, fires have comprised approximately 20 percent of all notifiable incidents and approximately 25 percent of notifiable mechanical plant incidents reported by metalliferous and extractives mines.

For the same period there has been a relatively steady increase in the number of fires reported on mechanical plant at underground metalliferous mines (see figure 1).

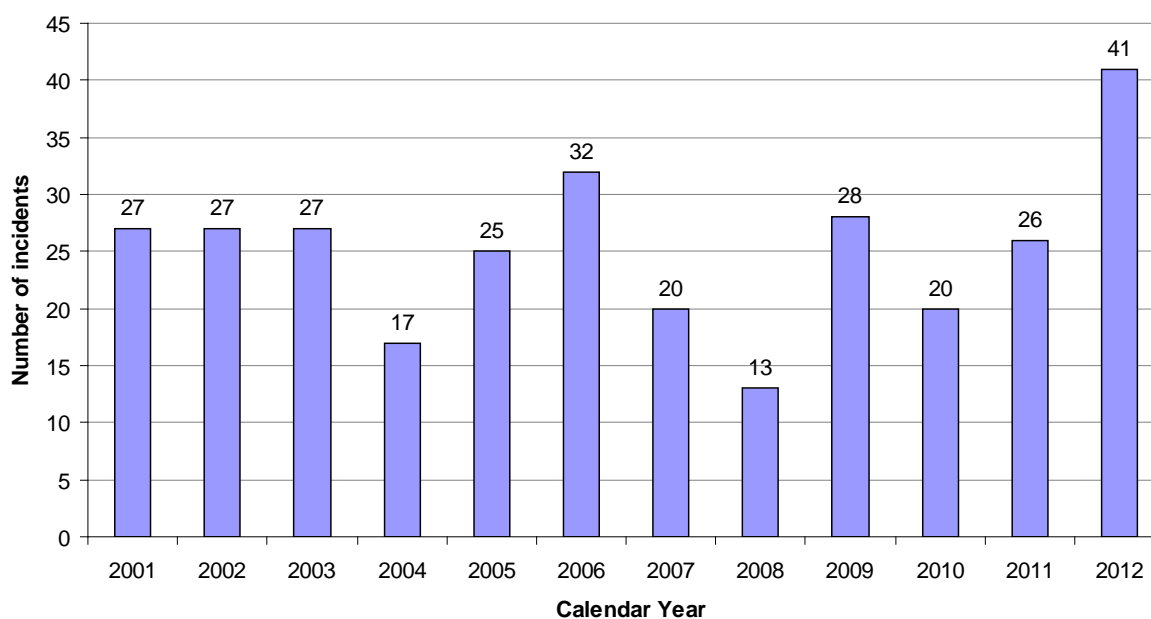


Figure 1 - Fires on mechanical plant at underground metalliferous mines 2001-2012

Since 2008, a total of 128 fires have been reported on mechanical plant at underground metalliferous mines. Mobile plant accounted for 76 percent of fires.

Of these, 23 (18 percent) were reported as resulting in plant damage. There was only one reported incident that resulted in injury. In this incident, an operator spilled fuel onto a petrol powered pump that ignited and caused some superficial burns to the face and forearm of the operator. The analysis highlights similar pattern to past analysis in 2001 and 2007.

3 Data

The data reviewed for this report is limited to the data contained in COMET. The data relates to underground metalliferous mines, both surface and underground operations and to mechanical plant (fixed plant and mobile plant).

Data for the period 1 January 2008 to 31 December 2012 was reviewed and 128 mechanical plant fires were identified and included in this report (see Appendix C).

The data recorded in COMET is provided by mines when they submit a Mine Notification of Incident Form or an incident investigation report and is collected by inspectors when they investigate a fire.

In some cases, the data available from COMET was not sufficient to be able to draw reliable conclusions about fires.

4 Fires

This section provides a breakdown of fires on mechanical plant at underground metalliferous mines as notified to NSW Trade & Investment for the period from January 2008 to December 2012.

There are approximately 38 underground metalliferous mines in NSW. This analysis relates to 12 mines.

4.1 Mines

Figure 2 shows the range of results for some mines.

The greatest number of fires occurred in the Cobar area 70 (55 percent). There have been 45 (35 percent) fires in the Orange area and 13 (10 percent) fires in the Broken Hill area.

Data available from COMET was insufficient to determine if a relationship existed between the number of fires at mines and the size and nature of the mining operation.

The data shows the average number of fire incidents on mechanical plant at underground metalliferous mines for the 2008-2012 period was 10.7 (i.e. average 2.7 fires per mine per year).

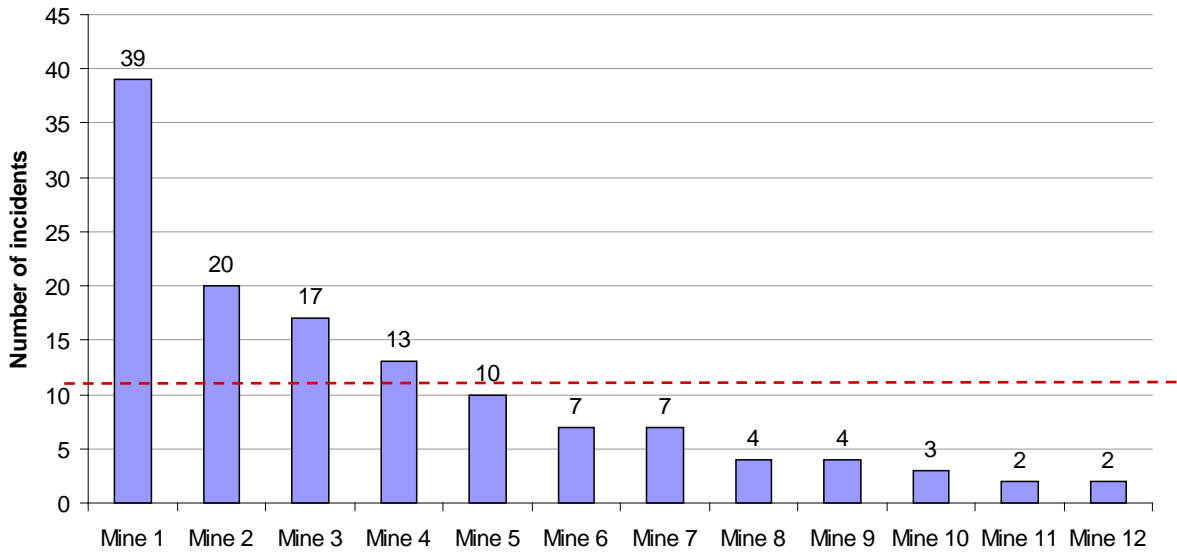


Figure 2 - Fires on mechanical plant at underground metalliferous mines by mine 2008-2012

4.2 Location of incidents

The majority of fires have occurred in underground parts of the mine, 99 (77 percent).

Underground drives and declines were the locations of 71 fires (55 percent), refer figure 3. This is unremarkable given the type of plant being used at these mines and the nature of the work being undertaken.

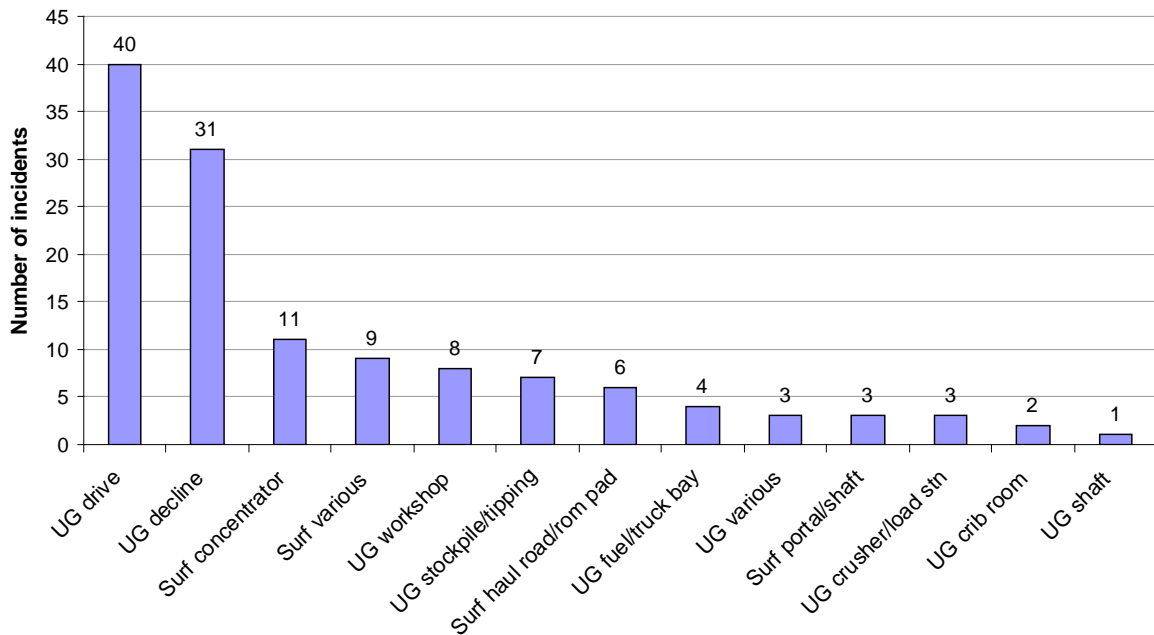


Figure 3 - Fires on mechanical plant at underground metalliferous mines by location of incident 2008-2012

4.3 Plant

Figure 4 identifies how the number of fires compared for different types of plant.

Dump trucks and loaders sustained 48 fires (38 percent), all other heavy mobile plant combined sustained 36 (28 percent) fires. Light vehicles, which at most mines significantly outnumber heavy plant, sustained only 13 (10 percent) fires.

It appears that the complexity of hydraulic, fuel, electrical and braking systems on heavy mobile plant, and the nature of the work being undertaken, created the greatest potential for damage and for a fire. Data available from COMET was not sufficient to establish if any particular item of plant was particularly prone to fire.

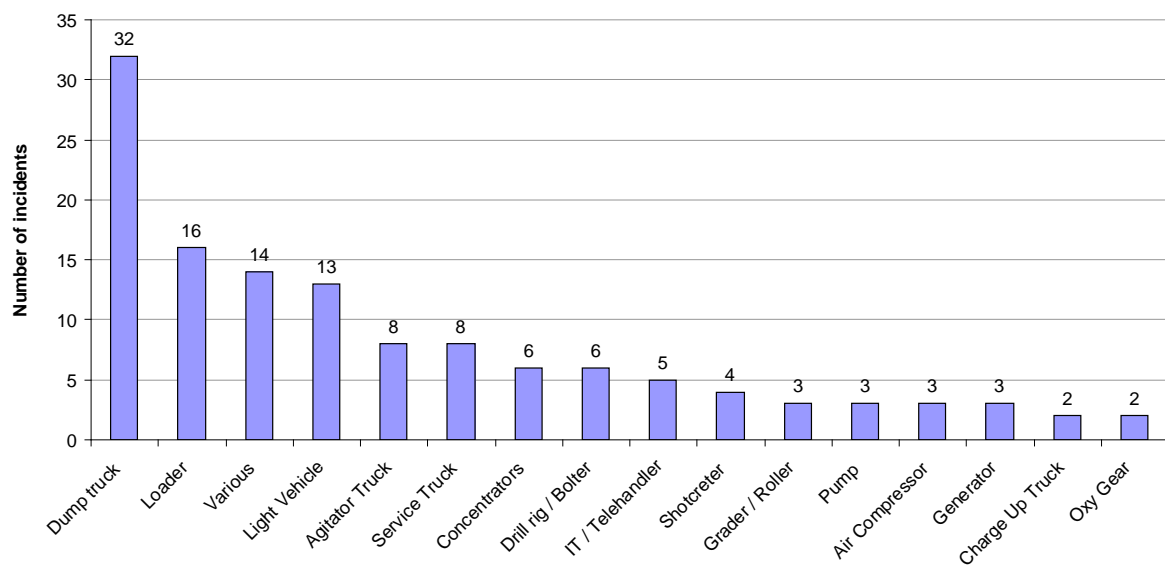


Figure 4 - Fires on mechanical plant at underground metalliferous mines by equipment type 2008-2012

4.4 Location of fire

The majority of fires on mechanical plant, 71 (55 percent), have occurred on the engines or exhaust of mobile plant (see figure 5). This result is supported by the data contained in figures 6, 7 and 8.

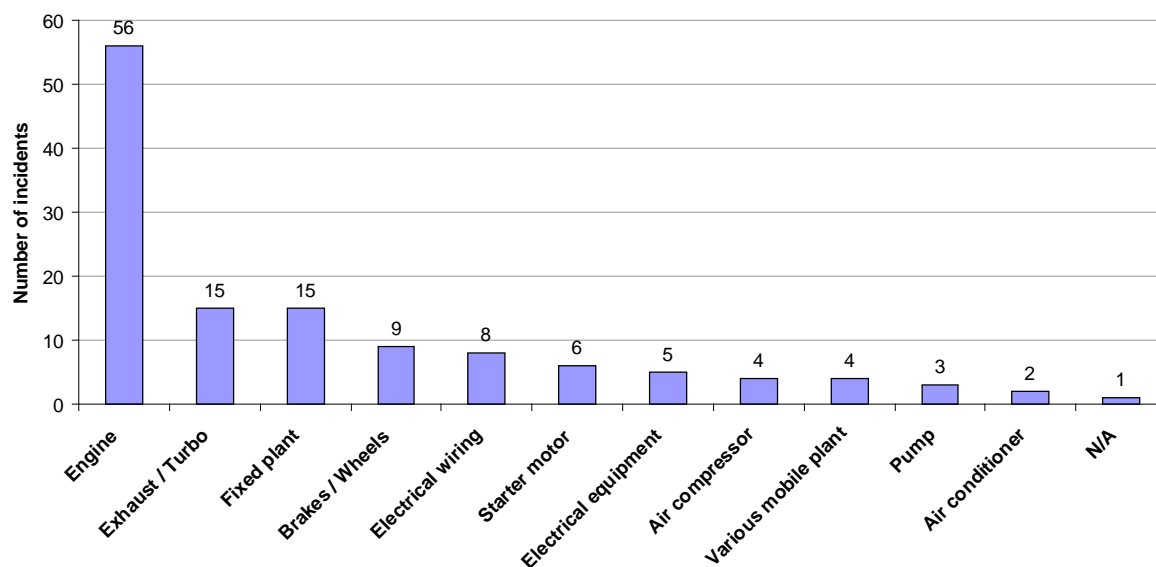


Figure 5 - Fires on mechanical plant at underground metalliferous mines by location of fire 2008-2012

4.5 Fuel source, heat source and contributing factors

Figures 6, 7 and 8 provide data relating to the fuel source, heat source and contributing factors for fires on mechanical plant at underground metalliferous mines.

In a number of cases there was more than one fuel source, heat source or contributing factor and all have been counted. For example, exhaust lagging has been a fuel source in a number of fires but only when it was contaminated with fuel or oil.

The data contained in these figures is generally consistent with the data contained in previous reports, which counted all fires reported by the NSW mining industry from 2001 to 2007 inclusive. This suggests that the principal causes of fires on mechanical equipment in NSW mines, and therefore the controls required to prevent fires, have been well known for at least the past 10 years. Nevertheless the incidence of fires is increasing.

Figure 6 shows the principal fuel source for fires is hydraulic oil, lubricating oil, fuel and grease, which made up 45 percent of the total (68 percent for 2001 to 2007). Electrical wiring made up 15 percent of the total, combustible material; e.g. rags, made up 13 percent of the total and exhaust lagging made up 9 percent of the total. All are significant factors.

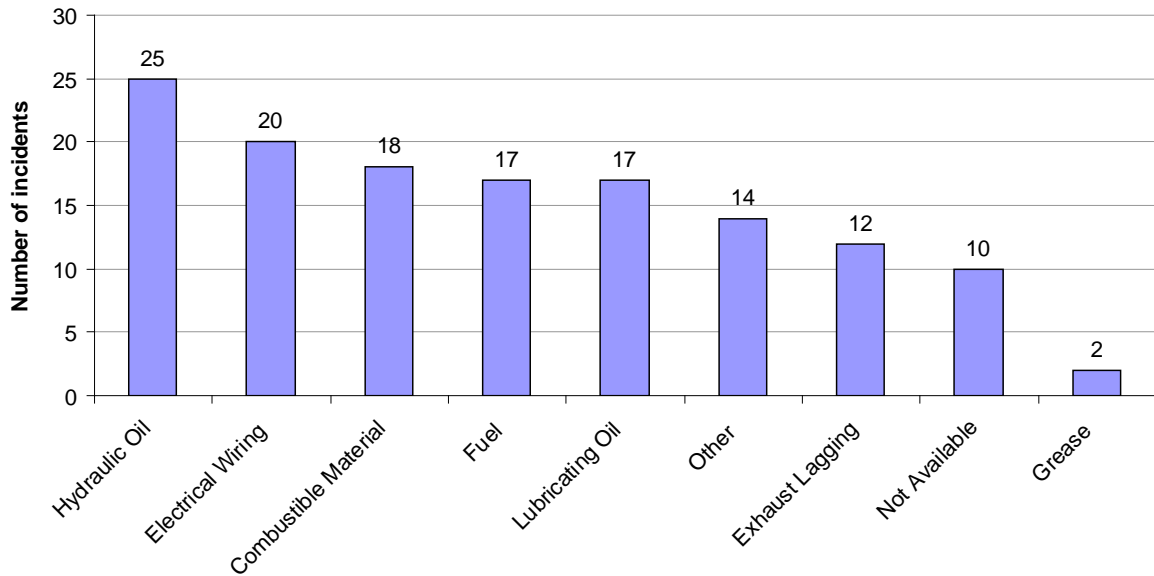


Figure 6 - Fires on mechanical plant at underground metalliferous mines by fuel source 2008-2012

Figure 7 identifies the principal heat source for fires is the exhaust system, engine and turbo on mobile plant which made up 48 percent of the total (62 percent for 2001 to 2007). Electrical faults made up 21 percent of the total (14 percent for 2001 to 2007).

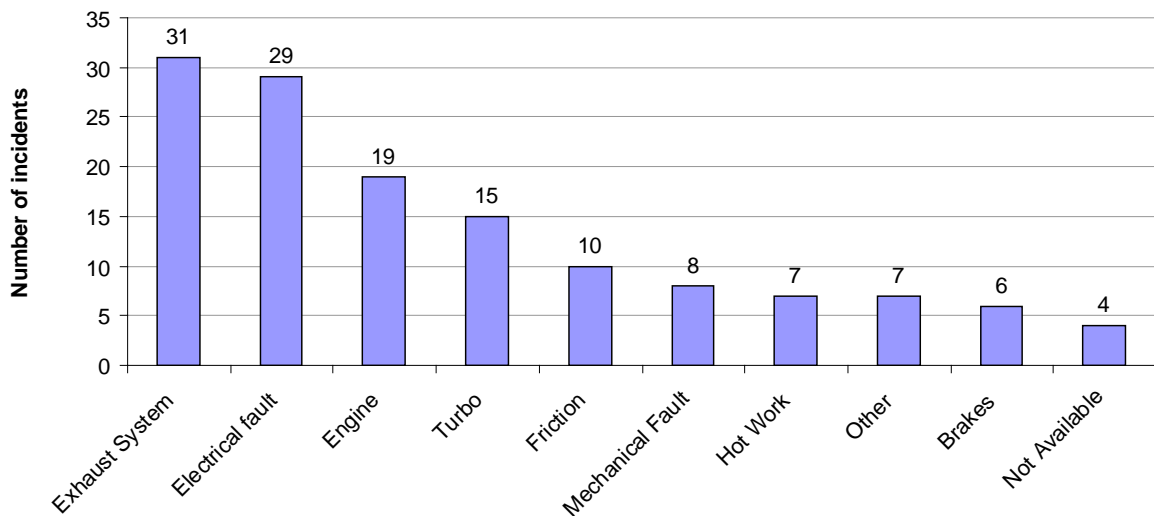


Figure 7 - Fires on mechanical plant at underground metalliferous mines by heat source 2008-2012

Figure 8 shows the principal contributing factors for fires are human error and poor maintenance that together made up 30 percent of the total (20 percent for 2001 to 2007). The identification of human error and poor maintenance was made as objectively as COMET data permitted. Oil and fuel line failure made up 27 percent of the total (32 percent for 2001 to 2007) and electrical component failure made up 20 percent of the total (11 percent for 2001 to 2007).

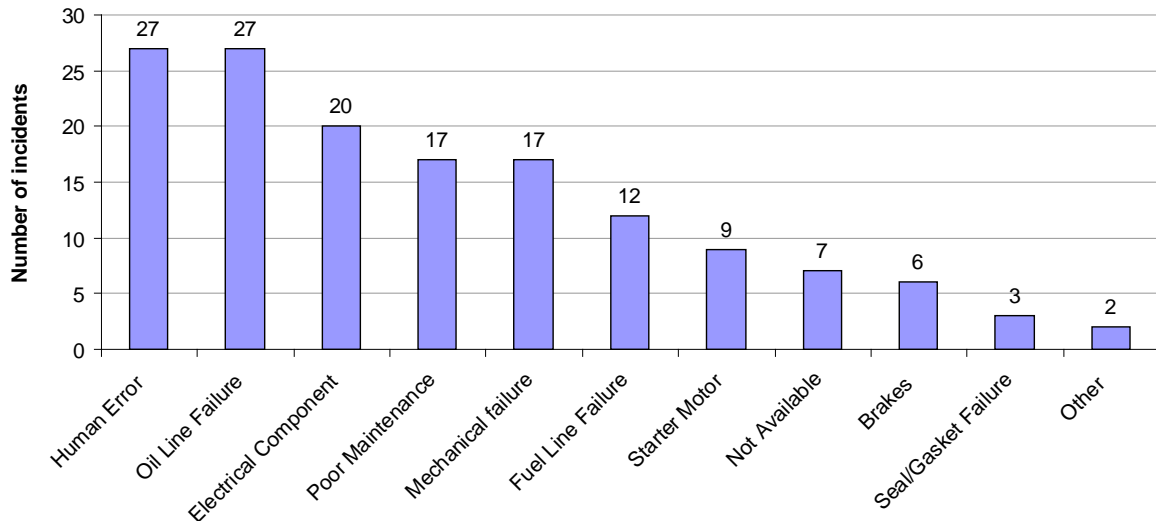


Figure 8 - Fires on mechanical plant at underground metalliferous mines by contributing factors 2008-2012

4.6 Fire fighting

Mobile plant made up 97 (76 percent) of the 128 fires reported on mechanical plant at underground metalliferous mines (see figure 4).

Figure 9 shows how fires were extinguished. The figure shows most fires were extinguished with hand-held extinguishers 44 (34 percent). AFFF fire suppression systems, generally the safest option for fire fighting on mobile plant, were used in only 25 (20 percent) fires.

Fire suppression systems were used in another 11 (9 percent) fires in combination with a fire extinguisher, which suggests that they did not operate effectively and this conclusion is supported by information contained in some of the corresponding COMET events. However data available from COMET was not sufficient to establish a reliable conclusion regarding fire fighting because 41 (32 percent) COMET events contained no information at all regarding fire fighting.

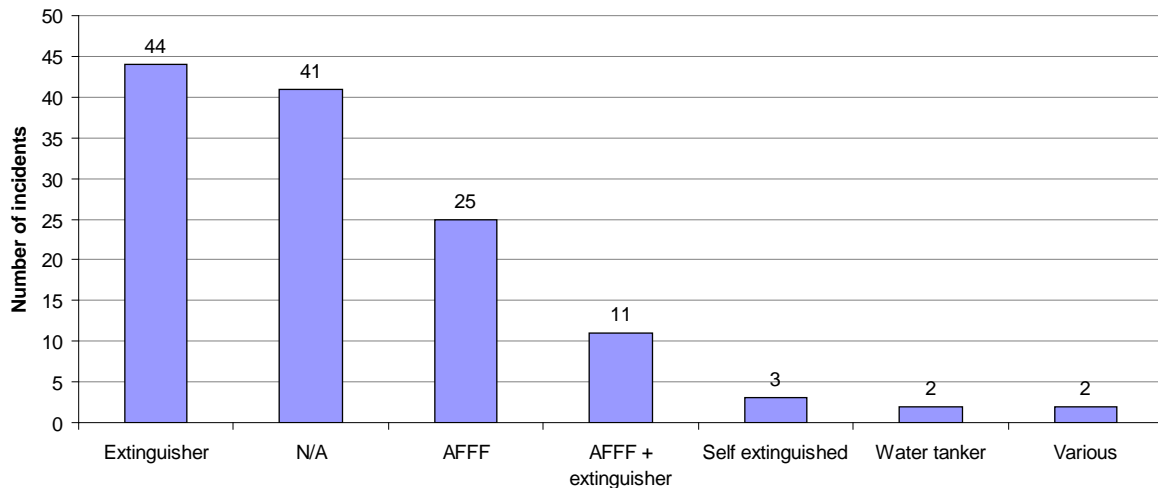


Figure 9 - Fires on mechanical plant at underground metalliferous mines by fire fighting 2008-2012

4.7 Corrective actions

In 67 (52 percent) cases, mines responded to a fire by conducting an investigation or an inspection, refer figure 10.

However in the majority of these cases, data available from COMET was not sufficient to confirm that the cause of the fire was correctly identified and that risk management principles were applied to select and implement appropriate control measures. In 29 (23 percent) cases, mines determined that to repair or replace damaged components was sufficient corrective action and there was no indication that an investigation was completed. In another 29 (23 percent) cases, mines responded by undertaking risk assessments, reviewing operating and maintenance procedures, consulting the OEM and issuing safety alerts.

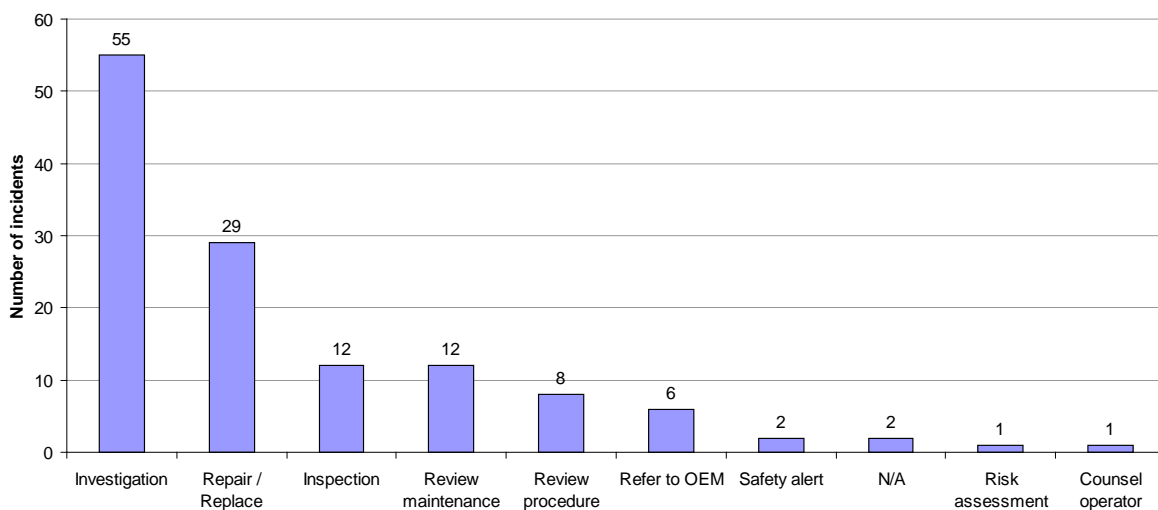


Figure 10 - Fires on mechanical plant at underground metalliferous mines by corrective action 2008-2012

5 Recommendations

The number of fires on mechanical plant at underground metalliferous mines has increased steadily over the past five years. Mines are encouraged to read this report in parallel with a review of their own fire incident records to identify areas for improvement that are specific to their mine.

1. Mines should review their Mine Safety Management Plan (MSMP) to verify that risks associated with fires on mechanical plant are identified and that appropriate control measures are in place.
2. The plan should require that fire risk assessments are carried out and that control measures are implemented on mobile plant in a manner consistent with AS 5062, *Fire protection for mobile and transportable equipment*. Risk assessments should consider the information in Appendix C.

The majority of fires occur in underground parts of the mine.

3. Mines should review their Emergency Management Plan to verify that emergency response, fire fighting and evacuation procedures are sufficient to adequately control the fire risk associated with the use of mechanical plant in the underground mine.

The majority of fires occur on underground dump trucks and loaders.

4. Mines should review their own fire incident records to identify the plant most prone to fire at their mine and are encouraged to implement a targeted campaign to identify and control the cause of fire on that plant.

The most common fuel source for fires is hydraulic oil, lubricating oil and diesel fuel originating from a failed or damaged hydraulic hose, oil line or fuel line.

5. Mines should manage hydraulic hoses with consideration to the recommendations in MDG 41 *Guideline for fluid power system safety at mines*, as applicable.
6. Where reasonably practicable, a preventative maintenance regime should be implemented to change out hydraulic hoses, oil lines and fuel lines before they fail.
7. Consideration should be given to the fitting of shields/guards to protect hoses and lines that might be physically damaged during plant operation.

The most common heat source for fires is the exhaust system, hot engine surfaces and turbo of mobile plant.

8. Consideration should be given to the consequences of oil and fuel coming into contact with hot engine components as part of a fire risk assessment. Where reasonably practicable consider shielding to prevent that contact.

Electrical faults and electrical wiring are also a common heat source and electrical wiring insulation is a fuel source for fires on plant. This is particularly evident where electrical systems have been modified or where aftermarket electrical equipment has been installed.

9. Mines should implement systems that consider the electrical wiring recommendations of MDG 15 *Guideline for mobile and transportable equipment for use in mines*, AS 5062 and the relevant electrical standards.

Significant contributing factors for fires are poor maintenance practices and human error.

10. Mines should verify maintenance practices keep plant in a fit for purpose condition with minimal potential for a fire to initiate or propagate.
11. Maintenance should be carried out by competent people who are aware of the potential for their activities to alter the fire risk.
12. Plant operators should be competent to safely operate plant, use automatic and manual fire control systems, and to implement emergency response procedures in the event of a fire.

Fire suppression systems are generally the safest and most effective system for fire fighting but are not always used as the primary fire control system on mobile plant and when used do not always operate effectively.

13. Fire suppression systems should be installed on all mobile plant operating in underground metalliferous mines, as far as reasonably practicable.
14. Fire suppression systems should be designed, installed and maintained in accordance with AS 5062

The information provided by mines on the standard Mine Notification of Incident Form, and otherwise provided to NSW Mine Safety, is generally insufficient to be able to draw reliable conclusions about the fire.

15. Mines should conduct a thorough investigation of every fire. The investigation should include;
 - Positively identifying the cause of the fire,
 - Identifying all contributing factors,
 - Implementing effective risk control measures to prevent a recurrence of the fire, and
 - Consultation with an expert fire investigator.
16. Sufficient information should be provided to NSW Mine Safety for all fires to complete the draft ancillary report form as attached in Appendix D.

Appendix A - References

- MDG 15, *Guideline for mobile and transportable plant for use at mines*
- AS 5062 – 2006, *Fire protection for mobile and transportable equipment*
- MDG 41, *Guideline for fluid power system safety at mines*
- *Implementing a Risk Process Approach to Fire Protection - AS 5062*
PowerPoint Presentation Peter Sunol Mine Safety 2008
- *Comet Incident Report – Mechanical Equipment Mobile – Fires*
Excel Spreadsheet Peter Sunol Mine Safety 2008
- *Comet Incident Report – Fires in Underground Mines*
PDF Summary List Kaye Tam Mine Safety 2013

Appendix B - Incident and injury notification legislation

Mine Health and Safety Act 2004 (MHSA 2004)

Section 88(1)(a) *any incident at the mine that has resulted in a person being killed*

Section 88(1)(b) *any other incident at the mine of a kind prescribed by regulations for the purpose of this paragraph*

Mine Health and Safety Regulation 2007 (MHSR 2007)

Clause 145(c)(ii) *an imminent risk of explosion or fire that presents an immediate threat to life or of permanent incapacitating injury*

Clause 145(e) *an uncontrolled explosion or fire*

Clauses 145(a)(i)–(vi) *an injury to a person that results (at any time after the injury) in a notifiable nature of injury*

Clause 145(c)(iv) *any event or circumstance that presents an immediate threat to life or of permanent incapacitating injury – serious burns to a person*

Clause 145(b) *an event that results (at any time after the event) in the admission of a person to hospital as an in-patient*

Clause 146(1)(a) *an injury to a person that results in the person being unfit, for a continuous period of at least 7 days, to attend the person's usual place of work, to perform his or her usual duties at his or her place of work or, in the case of a non-employee, to carry out his or her usual work activities (where that unfitness is supported by a medical certificate).*

See <http://www.legislation.nsw.gov.au/>

Appendix C – COMET data – Fires on mechanical plant at underground metalliferous mines 2008 to 2012

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
31/12/12	Underground drive	Dump truck	Combustible material left in an engine bay after maintenance activities fell onto the hot engine exhaust manifold and ignited resulting in a fire on the engine.	Fire suppression system and extinguisher	Inspection of all similar plant and incident investigation	Combustible material	Exhaust system	Human error
29/12/12	Underground drive	Air compressor	Heat from the exhaust of a diesel powered air compressor ignited combustible material located adjacent.	Extinguisher	Inspection of all similar plant and incident investigation	Combustible material	Exhaust system	Human error
26/12/12	Surface waste dump	Dump truck	A lubricating oil supply line to the fuel pump has ruptured spilling oil onto the hot engine exhaust manifold, which then ignited resulting in a fire on the engine.	Fire suppression system and extinguisher	Incident investigation	Lubricating oil	Exhaust system	Oil line failure
5/12/12	Surface buildings	Mop bucket	A discarded cigarette ignited a fire in a dry mop bucket.	Extinguisher	Incident investigation	Combustible material	Other	Human error
1/12/12	Surface concentrator	Gearbox	A bearing on a mill gearbox high speed input shaft failed causing overheating, which ignited oil that had leaked from the gearbox.	Extinguisher	Incident investigation	Lubricating oil	Friction & mechanical fault	Mechanical failure
28/11/12	Underground crib room	Woven matting	A discarded cigarette ignited a fire on a piece of woven matting.	Not available	Incident investigation	Combustible material	Other	Human error
16/11/12	Underground drive	Dump truck	Leaking coolant spilled onto engine exhaust insulation lagging and evaporated leaving a flammable residue that mixed with oil and ignited resulting in a fire on the engine exhaust.	Fire suppression system	Inspection of all similar plant and incident investigation	Exhaust lagging	Turbo	Poor maintenance

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
10/11/12	Underground decline	Dump truck	The engine turbo oil supply line failed allowing lubricating oil to spray onto the hot engine turbo and exhaust which resulted in a fire on the engine.	Not available	Inspection of all similar plant and incident investigation	Lubricating oil	Turbo	Oil line failure
29/10/12	Underground decline	Grader	Incorrectly installed injector rail leaked diesel fuel onto hot engine components, which resulted in a fire on the engine.	Fire suppression system	Incident investigation	Fuel	Engine	Fuel line failure & poor maintenance
25/10/12	Underground drive	Grader	Incorrectly installed diesel fuel delivery lines to injectors leaked fuel onto hot engine component that resulted in a fire on the engine.	Fire suppression system	Incident investigation	Fuel	Engine	Fuel line failure & poor maintenance
23/10/12	Underground drive	LV	Leaking fuel from faulty injectors came into contact with hot engine exhaust components, which resulted in a fire on the engine.	Fire suppression system	Incident investigation	Fuel	Exhaust system	Fuel line failure
16/10/12	Underground workshop	Loader	Molten metal generated by hot work on a loader bucket fell onto a small plastic storage container and ignited a fire on the container.	Extinguisher	Review inspection and maintenance procedures	Other	Hot work	Human error
13/10/12	Underground drive	Agitator truck	The engine turbo failed and released oil into the hot engine exhaust and exhaust insulation lagging resulting in a fire on the engine.	Fire suppression system	Review inspection and maintenance procedures	Exhaust lagging	Turbo	Seal/gasket failure
6/10/12	Surface concentrator	Loader	An electrical short circuit in wiring to the starter motor solenoid ignited a fire on the starter motor.	Extinguisher	Incident investigation	Electrical wiring	Electrical fault	Starter motor
26/9/12	Surface concentrator	Cone crusher	Drive belts powering a blocked cone crusher slipped on the pulleys and overheated, which ignited a plastic cowling used to guard the belts.	Extinguisher	Incident investigation	Other	Friction	Not available
4/9/12	Underground shaft	Electrical cable	Hot sparks and embers from oxy cutting in a shaft fell to lower levels and ignited the sheathing on redundant electrical cables.	Extinguisher	Review inspection and maintenance procedures	Electrical wiring	Hot work	Human error

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
2/9/12	Underground drive	Loader	The engine turbo failed and released oil into the hot engine exhaust resulting in a fire on the engine.	Fire suppression system and extinguisher	Incident investigation	Lubricating oil	Exhaust system	Mechanical failure
21/8/12	Underground drive	Drill rig	An electrical fault in a spool valve solenoid resulted in overheating which ignited the solenoid.	Extinguisher	Inspection of all similar plant and incident investigation with OEM	Electrical wiring	Electrical fault	Electrical component
14/8/12	Underground fuel bay	Agitator truck	An operator manually refuelling a fast fill fuel tank spilled diesel fuel from the manual refuelling nozzle onto hot engine components which ignited a fire on the engine.	Fire suppression system	Incident investigation	Fuel	Exhaust system	Human error
6/8/12	Underground workshop	LV	Electrical wiring to spotlights installed incorrectly, which resulted in a fire on the spotlights.	Extinguisher	Repair or replace	Other	Electrical fault	Electrical component
16/7/12	Underground decline	Agitator truck	The fast fill fuel tank was incorrectly fitted with a vented manual fill fuel tank cap that allowed fuel to escape from the cap and splash onto the adjacent hot engine exhaust insulation lagging where it ignited, which resulted in a fire on the engine.	Fire suppression system and extinguisher	Incident investigation	Fuel & exhaust lagging	Exhaust system	Fuel line failure & human error
9/7/12	Underground decline	Agitator truck	A hydraulic hose failed in the articulation area and sprayed oil onto the hot engine exhaust insulation lagging and ignited, which resulted in a fire on the engine.	Fire suppression system and extinguisher	Repair or replace	Hydraulic Oil & Exhaust Lagging	Exhaust System	Oil Line Failure
8/7/12	Surface ROM pad	Loader	A hydraulic hose failed and oil came into contact with hot engine surfaces which resulted in a fire on the engine.	Fire suppression system	Incident investigation	Hydraulic oil	Engine	Oil line failure
20/6/12	Surface portal	Shotcreter	Hydraulic oil has leaked from a damaged hose to a spray boom cylinder onto the hot engine exhaust manifold insulation lagging where it has ignited and resulted in a fire on the engine.	Fire suppression system	Incident investigation	Hydraulic oil & exhaust lagging	Exhaust system	Oil line failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
1/5/12	Surface lay down	Sea containers	A discarded cigarette ignited a fire that destroyed two shipping containers and the spare parts and stores kept in them.	Not available	Inspection of all similar plant	Combustible material	Other	Human error
22/4/12	Underground drive	Bolter	A hydraulic hose to a steering pump became abraded by an adjacent hose and the resulting leak sprayed oil onto the hot engine turbo which resulted in a fire on the engine.	Fire suppression system	Inspection of all similar plant and incident investigation	Hydraulic Oil	Turbo	Oil Line Failure
9/4/12	Underground decline	Water truck	A primary oil feed line to the hydraulic water pump had ruptured and hydraulic oil had come into contact with hot engine exhaust components which resulted in a fire on the engine.	Fire suppression system	Inspection of all similar plant and repair or replace	Lubricating oil	Exhaust system	Oil line failure
4/4/12	Surface concentrator	Blower unit	An electric motor failed, which resulted in a fire in the blower unit housing.	Not available	Incident investigation	Other	Mechanical fault	Mechanical failure
2/4/12	Underground drive	Dump truck	An idler pulley on the fan belt assembly failed and seized but the belts continued to spin and overheated due to friction, which ignited the belts.	Not available	Incident investigation	Combustible material	Engine	Human error
22/3/12	Underground drive	Dump truck	Flammable material left in the engine bay and oil spilled into the engine exhaust insulation lagging during maintenance were ignited by the hot engine exhaust, which resulted in a fire on the engine.	Extinguisher	Incident investigation	Combustible material	Engine	Human error
9/3/12	Surface car park	Trailer	A worn wheel bearing became loose and overheated, which resulted in a fire on the wheel hub.	Extinguisher	Incident investigation	Grease	Friction & mechanical fault	Mechanical failure
2/3/12	Underground drive	N/A	Emulsion that over sprayed from a faulty valve onto hot work lights ignited, which resulted in a fire on the lights.	Not available	Repair or replace	Other	Other	Mechanical failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
8/2/12	Underground drive	Dump truck	An incorrectly fitted hydraulic hose that was abraded by an adjacent hose ruptured and sprayed oil onto the hot engine exhaust, which resulted in a fire on the engine.	Fire suppression system	Incident investigation	Not available	Not available	Not available
6/2/12	Surface haul road	Agitator truck	Metal pipe fittings stored under a cabin seat made contact with exposed electrical wiring and sparking ignited flammable material located under the seat.	Extinguisher	Incident investigation	Combustible material	Electrical fault	Electrical component & poor maintenance
5/2/12	Underground workshop	LV	A circuit board on a dual battery isolator failed and ignited the board and associated wiring.	Fire suppression system	Repair or replace	Electrical wiring	Electrical fault	Electrical component
1/2/12	Underground drive	Shotcreter	A starter motor failed and caused overheating of associated wiring which ignited the insulation to the wiring.	Fire suppression system	Repair or replace	Electrical Wiring	Electrical Fault	Starter Motor
21/1/12	Underground drive	Loader	The fan to the axle/differential oil cooler malfunctioned probably for age related reasons and overheated, which resulted in a fire on the fan.	Extinguisher	Refer to OEM and repair or replace all equivalent fans	Other	Electrical fault	Electrical component
18/1/12	Underground drive	Generator	The OEM wiring was modified to add an isolation switch and an E-stop switch but the wrong size wire was used and no fuse was installed and this resulted in overheating of the wiring, which ignited the insulation to the wiring.	Extinguisher	Inspection of all similar plant and incident investigation	Electrical wiring	Electrical fault	Electrical component
17/1/12	Underground drive	Charge up truck	A hydraulic fitting on a brake accumulator line failed allowing hydraulic oil to spray onto hot engine exhaust components, which resulted in a fire on the exhaust system.	Not available	Incident investigation	Hydraulic oil	Exhaust system	Oil line failure
5/1/12	Underground drive	Loader	A crack in a diesel tank fuel tank arising from previous fuel tank repairs allowed fuel to leak onto hot engine components, which resulted in a fire on the engine.	Not available	Structural inspection of plant	Fuel	Engine	Mechanical failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
2/1/12	Underground drive	Loader	A crack in a diesel tank fuel tank allowed fuel to leak onto hot engine components, which resulted in a fire on the engine.	Not available	Repair or replace	Fuel	Engine	Mechanical failure
26/12/11	Underground decline	LV	The engine oil filler cap blew off and lubricating oil leaked onto hot engine exhaust components, which resulted in a fire on the engine.	Not available	Remove plant from service	Lubricating oil	Engine	Mechanical failure
7/12/11	Underground drive	Dump truck	A failed engine turbo drain pipe has allowed lubricating oil to spray onto the hot engine turbo where it has ignited and resulted in a fire on the engine.	Fire suppression system	Incident investigation	Lubricating oil	Turbo	Oil line failure
7/12/11	Underground drive	LV	Excessive winding of the starter motor with a faulty solenoid has overheated the wiring between the starter motor and the solenoid and ignited a rubber boot over the starter motor wiring loom.	Extinguisher	Review pre start check procedure	Electrical wiring	Electrical fault	Starter motor
1/12/11	Underground fuel bay	Dump truck	Various components of a fast fill fuel system, including the fuel tank cap and overflow, have failed and diesel fuel sprayed out of the fuel tank and came into contact with the hot engine turbo and ignited, which resulted in a fire on the engine.	Deluge system	Incident investigation and overhaul of fast fill fuel system	Fuel	Engine	Fuel error
26/11/11	Underground decline	Shotcreter	An engine shutdown occurred due to a fuel system problem and when attempting a restart the starter motor wiring overheated and ignited a rubber boot over the starter motor wiring loom.	Fire suppression system	Incident investigation	Electrical wiring	Electrical fault	Starter motor
23/11/11	Underground stockpile	Charge up truck	An engine turbo drain hose failed allowing lubricating oil to come into contact with hot engine exhaust components, which resulted in a fire on the engine.	Fire suppression system	Incident investigation	Lubricating oil	Exhaust system	Mechanical failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
10/11/11	Underground drive	Loader	A rocker cover had come loose due to missing and stripped bolts which allowed lubricating oil to leak onto hot engine exhaust components which resulted in a fire on the engine.	Extinguisher	Incident investigation and review maintenance procedures	Lubricating Oil	Exhaust System	Poor Maintenance
21/10/11	Surface concentrator	Mill	A clutch drum malfunctioned and rotated inside the clutch shoes resulting in overheating which ignited flexible hoses associated with the clutch.	Extinguisher	Repair or replace	Other	Friction & Mechanical Fault	Mechanical Failure
20/10/11	Underground decline	Service Truck	A new packaged air filter being transported in a storage space fell into the engine bay and came into contact with hot engine exhaust components which ignited the packaging and air filter.	Not available	Install exhaust shield	Combustible Material	Exhaust System	Human Error
19/10/11	Underground workshop	Loader	Degreaser being sprayed onto an engine came into contact with the hot engine exhaust and ignited which resulted in a fire on the exhaust.	Extinguisher	Incident investigation and ban flammable degreaser from site	Combustible Material	Exhaust System	Human Error
7/10/11	Surface concentrator	Column cell	Heat generated by oxy cutting a section of pipe from the top of a column cell ignited the rubber lining inside the column cell.	Not available	Risk assessment	Combustible Material	Hot Work	Human Error
1/10/11	Surface excavation	Dump Truck	A control valve missing from the top of the diesel fuel primer pump allowed fuel to leak onto hot engine components which resulted in a fire on the engine.	Not available	Incident investigation	Fuel	Engine	Fuel Line Failure
17/9/11	Underground decline	Dump Truck	An earth wire from an air conditioner compressor was not correctly earthed to the metal chassis and the wire overheated, which resulted in a fire on the air conditioner compressor.	Not available	Inspection of all similar plant and incident investigation with OEM	Electrical wiring	Electrical fault	Electrical component

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
17/9/11	Underground stope	Remote control unit	A 12 volt power supply cable to a remote control unit for remote loaders had a short circuit, which resulted in a fire in the insulation of the wiring harness to the remote control unit.	Self extinguished	Repair or replace	Electrical wiring	Electrical fault	Electrical component
12/9/11	Underground decline	Bolter	Leakage of hot exhaust gases from joints in the engine exhaust system ignited the insulation lagging on the catalytic converter.	Extinguisher	Incident investigation	Exhaust lagging	Exhaust system	Seal/gasket failure
28/8/11	Surface concentrator	Pump	Bearings seized in the barrel of a pump, which overheated and ignited a fire on the pump.	Extinguisher	Repair or replace	Not available	Mechanical fault	Mechanical failure
7/7/11	Underground stockpile	Dump truck	A failed hose or seal on an ejector cylinder has sprayed hydraulic oil onto a catalytic converter, which has ignited on contact with the hot engine exhaust components.	Extinguisher	Incident investigation	Hydraulic oil	Exhaust system	Oil line failure
6/7/11	Underground stockpile	Loader	A starter motor seized and overheated, which resulted in a fire on the starter motor.	Fire suppression system	Repair or replace	Not available	Electrical fault	Starter motor
1/5/11	Underground workshop	Tool carrier	Leaking fuel from faulty injectors came into contact with hot engine components that resulted in a fire on the engine.	Not available	Incident investigation	Fuel	Engine	Fuel line failure
22/4/11	Underground workshop	Water truck	Oil had impregnated the insulation lagging on the catalytic converter as a result of an earlier hydraulic oil leak and the oil ignited on contact with hot engine exhaust components.	Extinguisher	Repair or replace	Hydraulic oil & exhaust lagging	Exhaust system	Poor maintenance
24/3/11	Underground drive	Dump truck	A fitting in the brake charge valve system was loose and this allowed a small release of atomised oil under pressure, which ignited on contact with hot engine exhaust components resulting in a brief flame.	Extinguisher	Review inspection and maintenance procedures	Hydraulic oil	Exhaust system	Oil line failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
14/3/11	Underground decline	Dump truck	Underground debris, possibly concertina ventilation duct, became wrapped around a wheel hub and ignited resulting in a fire on the wheel.	Extinguisher	Incident investigation	Combustible material	Friction	Not available
10/3/11	Underground store	Telehandler	A starter motor remained engaged causing overheating of electrical wiring, which ignited the insulation to the wiring.	Extinguisher	Repair or replace	Electrical wiring	Electrical fault	Starter motor
14/2/11	Surface screening plant	Conveyor chutes	A boilermaker was flame cutting bolts from steel conveyor chute liners in a surface screening plant and a cut bolt fell onto rubber lining below and ignited a fire in the rubber lining.	Water hose	Incident investigation	Combustible material	Hot work	Human error
11/2/11	Underground truck bay	Dump truck	A hose gland on a steering cylinder failed causing hydraulic oil to spray onto hot engine exhaust components, which in turn ignited the oil resulting in a fire on the engine exhaust.	Extinguisher	Repair or replace	Hydraulic oil	Exhaust system	Oil line failure
31/1/11	Surface storage area	Oxy cutting	A spark from oxy cutting scrap steel ignited adjacent vegetation that resulted in a grass fire.	Extinguisher	Incident investigation	Combustible material	Hot work	Human error
16/12/10	Underground decline	LV	The plant was driven with the park brake applied, which resulted in overheating and brake pad combustion.	Not available	Incident investigation	Other	Brakes & friction	Brakes & human error
13/12/10	Underground decline	Fuel truck	Electrical wiring connected to an auxiliary battery was damaged by abrasion and overheated when in contact with exposed metal, which ignited the wiring insulation.	Not available	Relocate wiring and install circuit breaker	Electrical wiring	Electrical fault	Electrical component & poor maintenance
2/12/10	Underground drive	Generator	A mechanical failure of a shaft or coupling generated overheating and sparks, which resulted in a fire on the generator.	Extinguisher	Incident investigation and plant returned to supplier	Other	Friction & mechanical fault	Mechanical failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
29/10/10	Underground drive	Dump truck	An engine turbo drain pipe bolt became loose allowing oil to leak and pool around the turbo area where it ignited resulting in a fire on the engine.	Extinguisher	Inspection of all similar plant and incident investigation by OEM	Lubricating oil	Turbo	Oil line failure & poor maintenance
26/10/10	Underground drive	Drill rig	The air conditioner condenser fan overheated and ignited the insulation on adjacent electrical wiring.	Not available	Incident investigation by OEM	Other	Electrical fault	Electrical component
24/10/10	Underground decline	Dump truck	A poorly designed hydraulic fan motor supply pipe failed and sprayed a mist of oil onto the hot engine turbo and exhaust resulting in a fire on the engine.	Extinguisher	Incident Investigation and repair or replace by OEM	Hydraulic oil	Turbo	Oil line failure
13/10/10	Underground decline	Fuel truck	Electrical wiring in the cabin adjacent to the accelerator pedal became abraded by the driver's boot and the bare wiring shorted out and ignited the insulation to the wiring.	Not available	Repair or replace	Electrical wiring	Electrical fault	Electrical component
5/10/10	Underground decline	Dump truck	A ruptured hydraulic hose sprayed oil onto the hot engine exhaust and exhaust insulation lagging where it ignited resulting in a fire on the exhaust.	Fire suppression system and extinguisher	Inspection of all similar plant and incident investigation	Hydraulic oil & exhaust lagging	Exhaust system	Oil line failure
21/8/10	Underground decline	Shotcreter	A damaged nipple on a boom cylinder leaked oil onto the engine exhaust insulation, which then ignited on contact with the hot engine exhaust.	Extinguisher	Incident investigation	Hydraulic oil & exhaust lagging	Exhaust system	Oil line failure
19/8/10	Underground drive	Loader	New electrical wiring was not secured correctly and the insulation became abraded and exposed the wires, which resulted in a short circuit that ignited the wiring insulation.	Extinguisher	Incident investigation	Electrical wiring	Electrical fault	Electrical component & poor maintenance
2/8/10	Underground decline	Tool carrier	The plant was driven with the park brake applied, which resulted in overheating and ignited a fire on the brake.	Not available	Incident investigation	Not available	Brakes & friction	Brakes & human error

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
29/6/10	Underground drive	LV	Electrical wiring installed incorrectly without a fuse had a short circuit, which ignited the insulation to the wiring.	Fire suppression system	Incident investigation	Electrical wiring	Electrical fault	Electrical component & poor maintenance
3/6/10	Underground tipping point	Dump truck	A ruptured hydraulic hose sprayed oil onto hot engine turbo resulting in a fire on the engine.	Not available	Repair or replace	Hydraulic oil	Turbo	Oil line failure
10/5/10	Underground drive	Loader	A short circuit in the starter motor ignited the insulation to electrical wiring.	Not available	Incident investigation	Electrical wiring	Electrical fault	Starter motor
7/5/10	Underground drive	Loader	The engine turbo failed and released oil into the hot engine exhaust resulting in a fire on the engine.	Fire suppression system	Review inspection and maintenance procedures	Hydraulic oil	Exhaust system	Mechanical failure
30/4/10	Underground crib room	Pie warmer	The crib room pie warmer temperature was set too high, which ignited the contents and the pie warmer.	Extinguisher	Incident investigation	Combustible material	Other	Human error
21/4/10	Underground workshop	Water truck	Electrical fault in a beacon resulted in a fire in electrical wiring insulation.	Extinguisher	Incident Investigation and repair or replace	Electrical wiring	Electrical fault	Electrical component & poor maintenance
16/4/10	Surface construction site	Roller	A return fuel line and electrical wiring were worn through due to abrasion causing a short circuit, which ignited fuel vapour resulting in a fire in the wiring insulation.	Extinguisher and water tanker	Incident investigation	Fuel	Electrical fault	Fuel line failure & electrical component
18/3/10	Underground drive	Loader	Wiring harness insulation had worn through due to abrasion and the wiring arced and ignited the insulation.	Extinguisher	Review inspection and maintenance procedures	Electrical wiring	Electrical fault	Electrical component
11/3/10	Underground tipping point	Not available	A ruptured hydraulic hose sprayed oil onto hot engine turbo resulting in a fire on the engine.	Not available	Repair or replace	Hydraulic oil	Turbo	Oil line failure
31/12/09	Underground decline	Not available	Brakes caught fire while travelling loaded down a decline, possibly due to oil from hub seals leaking onto hot brake components.	Not available	Incident investigation	Lubricating oil	Brakes	Brakes

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
20/12/09	Underground stockpile	Dump truck	Rags left in the engine bay ignited when they came into contact with the hot engine exhaust.	Not available	Review pre start check procedure	Combustible material	Exhaust system	Poor maintenance
17/12/09	Underground loading station	Loading station flask	Hot metal from oxy cutting on a head chute fell to the level below and ignited the rubber flap on a load cell.	Extinguisher	Incident investigation	Combustible material	Hot work	Human error
14/12/09	Underground truck bay	LV	Chassis earth cable failed and overheated, which melted a fuel line component and ignited fuel resulting in a fire on the engine.	Not available	Inspection of all similar plant and incident investigation	Fuel	Electrical fault	Electrical component
10/12/09	Not available	Generator	Fire on generator.	Not available	Repair or replace	Not available	Not available	Not available
19/11/09	Underground loading station	Oxy cutting	A spark from oxy cutting scrap steel ignited oil in a spill tray near the work.	Not available	Review housekeeping	Lubricating oil	Hot work	Human error
16/11/09	Underground decline	Dump truck	Leaking fuel from faulty fuel line came into contact with hot engine components, which resulted in a fire on the engine.	Not available	Review inspection and maintenance procedures	Fuel	Engine	Fuel line failure
13/11/09	Underground drive	LV	Leaking fuel from faulty injectors came into contact with hot engine components, which resulted in a fire on the engine.	Not available	Review inspection and maintenance procedures	Fuel	Engine	Fuel line failure
23/10/09	Underground decline	Agitator truck	Brakes caught fire while travelling loaded down a decline, possibly due to oil from hub seals leaking onto hot brake components.	Extinguisher	Incident investigation	Lubricating oil	Brakes	Brakes
30/9/09	Underground decline	LV	A radiator hose clamp broke and the hose came free causing the engine to overheat and ignite oil on the engine.	Not available	Review inspection and maintenance procedures	Lubricating oil	Engine	Other
30/9/09	Surface stockpile	Dump truck	Diesel from a leaking fuel line was ignited by the hot engine exhaust, which resulted in a fire on the engine.	Not available	Repair or replace	Fuel	Exhaust system	Fuel line failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
16/9/09	Underground decline	Dump truck	Deposits of oil inside the engine exhaust insulation lagging were ignited by the hot exhaust that resulted in a fire on the engine.	Fire suppression system	Review inspection and maintenance procedures	Lubricating oil & exhaust lagging	Exhaust system	Poor maintenance
17/8/09	Surface concentrator	Concrete bunker	Spontaneous combustion of filter cake in a bunker due to sulphide mineral content, warm and sunny conditions, and gusting winds providing additional oxygen.	Water tanker	Not available	Other	Other	Other
8/7/09	Underground decline	Dump truck	Insulation lagging applied incorrectly to the engine turbo resulted in overheating that ignited and melted the turbo lagging.	Fire suppression system and extinguisher	Incident investigation	Exhaust lagging	Turbo	Human error
24/5/09	Underground crusher	Dump truck	A ruptured hydraulic hose sprayed oil onto hot engine components resulting in a fire on the engine exhaust.	Fire suppression system	Repair or replace	Hydraulic oil	Exhaust system	Oil line failure
2/5/09	Surface ROM pad	Dump truck	The centre drive shaft bearing failed and overheated and ignited grease.	Not available	Inspection of all similar plant	Grease	Mechanical fault	Mechanical failure
27/4/09	Underground decline	LV	The plant was driven with the hydraulic park brakes applied, which resulted in overheating and ignited a fire on one wheel.	Extinguisher	Incident investigation	Not available	Brakes	Brakes & human error
24/4/09	Underground drive	Dump truck	A fitting on the main hydraulic oil pump failed and sprayed a large quantity of oil onto the backs and onto hot engine components resulting in a fire on the engine.	Fire suppression system and extinguisher	Inspection of all similar plant and incident investigation	Hydraulic oil	Engine	Oil line failure
22/4/09	Surface shaft	Air compressor	A ruptured hydraulic hose is the probable cause of a fire on an air compressor.	Extinguisher	Incident investigation	Not available	Mechanical fault	Mechanical failure & poor maintenance
15/4/09	Underground decline	Dump truck	A brake hose failed and sprayed hydraulic oil onto the engine turbo that resulted in a fire on the engine.	Fire suppression system	Inspection of all similar plant and incident investigation	Hydraulic oil	Turbo	Oil line failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
4/4/09	Surface batching plant	Agitator truck	A short circuit in the starter motor ignited electrical wiring.	Not available	Incident investigation	Not available	Electrical fault	Starter motor
31/3/09	Underground decline	Pump	The drive belt to a pump failed and ignited resulting in a fire on the pump.	Not available	Incident investigation	Other	Friction	Mechanical failure
22/2/09	Underground drive	Bolter	Oil from leaking oil lines created a residue around a compressor and the oil was ignited by a fault in electrical wiring associated with the compressor.	Fire suppression system	Incident investigation	Hydraulic oil	Electrical fault	Oil line failure & electrical component
18/2/09	Surface ROM pad	Dump truck	A broken hydraulic hose sprayed oil onto the hot engine exhaust resulting in a fire on the engine	Not available	Incident investigation and review maintenance procedures	Hydraulic oil	Exhaust system	Oil line failure
8/2/09	Underground workshop	Tool carrier	The lubricating oil drain line from the engine turbo became disconnected allowing oil to escape onto hot engine components resulting in a fire on the engine.	Fire suppression system and extinguisher	Review inspection and maintenance procedures	Lubricating oil	Engine	Poor maintenance
4/2/09	Surface concentrator	Pump	An operator spilled some fuel while refuelling a petrol powered portable pump. When the operator attempted to restart the pump a fire ignited and the operator suffered superficial burns. Spilled fuel and vapour on the hot engine resulted in a fire on the pump.	Not available	Replace petrol powered plant	Fuel	Engine	Human error
28/1/09	Surface treatment plant	Dust extractor	Heat and smouldering detected in a newly commissioned dust extractor. Possibly caused by the combustion of chemical dusts being extracted.	Self extinguished	Incident investigation	Not available	Not available	Not available
16/1/09	Underground stockpile	Dump truck	A hydraulic hose rubbed through on electrical wiring and arced out. This resulted in a hole in the hose and ignition of the leaking hydraulic oil by the arcing.	Not available	Inspection of all similar plant	Hydraulic oil	Electrical fault	Electrical component

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
10/12/08	Underground drive	Tool carrier	Oil leaked onto the hot engine exhaust resulting in a fire on the engine.	Fire suppression system and extinguisher	Not available	Not available	Exhaust system	Not available
21/11/08	Underground decline	Loader	A hydraulic hose from the hydraulic implement pump ruptured and sprayed hydraulic oil over the hot engine turbo resulting in a fire on the engine.	Fire suppression system and extinguisher	Incident investigation	Hydraulic oil	turbo	Oil line failure
17/10/08	Underground	LV	An electrical short circuit caused overheating and ignition of electrical wiring that was part of an after market electrical installation that had no fuse protection.	Not available	Inspection of all equivalent electrical wiring	Electrical wiring	Electrical fault	Electrical component
15/10/08	Underground decline	Drill rig	The failure of electrical components resulted in overheating and ignition of wiring near the starter motor.	Extinguisher	Incident investigation	Electrical wiring	Electrical fault	Starter motor
7/10/08	Underground magazine	LV	An operator drove a light vehicle with the park brake applied, which caused overheating of the brake plates resulting in a fire on one wheel.	Not available	Counselling provided for operator	Other	Brakes	Brakes & human error
2/10/08	Surface portal	Air compressor	A diesel powered mobile air compressor suffered a mechanical failure that resulted in a fire on the engine. A secondary fire then ignited at the battery.	Extinguisher	Incident investigation	Not available	Not available	Mechanical failure
22/7/08	Surface treatment plant	Gas heater	A gas flame heater used to heat a hot-box to keep smelting materials dry inadvertently ignited adjacent wooden pallets.	Extinguisher	Incident investigation	Combustible material	Other	Human error
20/5/08	Underground decline	Explosives truck	Heat from the engine ignited the engine bay heat shield.	Not available	Review inspection and maintenance procedures	Other	Engine	Not available
3/4/08	Underground drive	Dump truck	The ejector cylinder developed an oil leak that squirted hydraulic oil onto the hot engine exhaust resulting in a fire in the exhaust lagging.	Extinguisher	Review pre start check procedure	Hydraulic oil & exhaust lagging	Exhaust system	Oil line failure

Incident date	Incident location	Plant type	Incident description	Fire fighting	Corrective action taken	Fuel source	Heat source	Contributing factors
20/2/08	Underground drive	Dump truck	A fitting on a diesel fuel line came loose and allowed fuel to drip onto the hot engine exhaust resulting in a fire on the engine.	Fire suppression system and extinguisher	Incident investigation	Fuel	Exhaust system	Fuel line failure
5/2/08	Underground drive	Service truck	Hydraulic oil leaked from a corroded feed pipe onto the hot turbo resulting in a fire on the engine.	Extinguisher	Incident investigation and review maintenance procedures	Hydraulic oil	Turbo	Oil line failure & poor maintenance
20/1/08	Underground decline	Agitator truck	The engine tappet cover gasket failed allowing engine oil to contact the hot turbo resulting in a fire on the engine.	Self extinguished	Review inspection and maintenance procedures	Lubricating oil	Turbo	Seal/gasket failure & poor maintenance
4/1/08	Underground drive	Loader	The main hydraulic oil line failed and sprayed oil onto the hot engine exhaust and turbo resulting in a fire on the engine.	Fire suppression system	Review engine and turbo shielding	Hydraulic oil	Turbo & engine	Oil line failure

Appendix D – Draft ancillary report form



Trade & Investment
Mine Safety

Ancillary Report – Fire related to Mobile Plant, Clause 145(e), MHSR 2007, Clause 55(e) and Clause 56(1)(n) CMHSR 2006

Pursuant to Clause 149 of the Mine Health and Safety Regulation (MHSR) 2007, this form is gazetted and additional to the Mine Notification of Incident Form. This Report must be completed and submitted to Trade & Investment Mine Safety within 7 days for all notifiable incidents subject to MHSR 2007 Clause 145(e), Clause 55(e) and 56(1)(n) of the Coal Mines Health and Safety Regulation (CMHSR) 2006 in relation to Mobile Plant only.

1 About the mining operation where the incident occurred:

Name of mining operation:		Date of incident:
Part of mine incident occurred (surface/UG):	Location of incident (e.g. workshop):	

2 Machine particulars:

Machine Type (e.g. haul truck, excavator):	Machine Manufacturer:
Machine Model:	Machine Build Year:
Machine Serial Number:	Machine Owner:
Length of time machine has been on site (months/years, etc):	
Was an 'introduction to site' type assessment completed prior to machine being placed into service? (yes/no):	

3 Last inspections:

Date of last pre-start check:	Were defects noted? (yes/no):
Date the machine was last serviced:	Were defects noted? (yes/no):
(Comments):	

4 Method of extinguishment:

How was the fire extinguished? (tick one only)	
<input type="checkbox"/> Fire protection system (automatically deployed)	<input type="checkbox"/> Fire protection system (automatically deployed) + hand held fire extinguisher
<input type="checkbox"/> Fire protection system (manually deployed)	<input type="checkbox"/> Fire protection system (manually deployed) + hand held fire extinguisher
<input type="checkbox"/> Hand held fire extinguisher only	<input type="checkbox"/> Self extinguished
<input type="checkbox"/> Water tanker	<input type="checkbox"/> Did not extinguish
<input type="checkbox"/> Other (Please provide detail)	

5 Fire protection system details:

What type of fire protection system was installed? (tick one only) (Ref. AS 5062 - 2006)	
Engineered fire suppression systems	
<input type="checkbox"/> Foam	<input type="checkbox"/> Water mist <input type="checkbox"/> Gaseous agent
Pre-engineered fire suppression systems	
<input type="checkbox"/> Foam water spray	<input type="checkbox"/> Powder <input type="checkbox"/> Dual agent <input type="checkbox"/> Aerosol
<input type="checkbox"/> Other (Please provide detail)	
Who is the manufacturer of the fire suppression system?	
Who was the installer? (Installation company):	

6 Failure mode of machine component/s:

For fires initiated by ignition of combustible fluid –		
Which machine component failed? Tick one (initial cause only):	How did the component fail? Tick one:	What caused the component failure? Tick one (initial cause only):
<input type="checkbox"/> Hose: <input type="checkbox"/> Pipe: <input type="checkbox"/> Fitting <input type="checkbox"/> Seal	<input type="checkbox"/> Rupture(burst) <input type="checkbox"/> Leak from loose fittings <input type="checkbox"/> Hose/fitting separation <input type="checkbox"/> Other (provide details)	<input type="checkbox"/> Corrosion <input type="checkbox"/> Fatigue <input type="checkbox"/> Physical damage <input type="checkbox"/> Loose fitting <input type="checkbox"/> Wear and tear <input type="checkbox"/> Other (provide details)
<input type="checkbox"/> Provide details:		
For other fires: Tick one (initial cause only):		
<input type="checkbox"/> Any part of the braking system <input type="checkbox"/> Any part of the starter motor <input type="checkbox"/> Cooling system failure <input type="checkbox"/> Provide details:		
<input type="checkbox"/> Any part of the turbo <input type="checkbox"/> Any electrical cable/wiring <input type="checkbox"/> Other (please specify the component and how it failed)		

7 Fuel source/s:

What was the fuel source? (tick as applicable)
<input type="checkbox"/> Hydraulic oil <input type="checkbox"/> Lubricating gear oil <input type="checkbox"/> Engine oil <input type="checkbox"/> Diesel/Petrol <input type="checkbox"/> Grease <input type="checkbox"/> Tyre <input type="checkbox"/> Poor housekeeping (rags/cartons/other debris)
<input type="checkbox"/> Other (please specify):

8 Heat source/s:

What was the heat source? (tick as applicable)
<input type="checkbox"/> Turbo <input type="checkbox"/> Engine <input type="checkbox"/> Exhaust system <input type="checkbox"/> Tyre(pyrolysis) <input type="checkbox"/> Electrical Wiring <input type="checkbox"/> Electrical Component <input type="checkbox"/> Battery <input type="checkbox"/> Friction (e.g. brakes) <input type="checkbox"/> Hot work(welding/grinding)
<input type="checkbox"/> Other (please specify):
Was the heat source lagged or covered? <input type="checkbox"/> Yes <input type="checkbox"/> No
Did the lagging help to prevent, or cause the fire <input type="checkbox"/> Yes <input type="checkbox"/> No
Comments:

9 Risk assessment:

Was a fire risk assessment conducted? (yes/no):
If 'yes', did it address this scenario? (please specify):

10 Recommendations for prevention:

Causal factors:

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If more space is required, please attach additional page(s)

Would a **design** change prevent or minimise failure? Yes (If yes, describe how below) No

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If more space is required, please attach additional page(s)

Would a **maintenance / testing / signoff** change prevent/minimise failure? Yes (If yes, describe how below) No

--	--

11 Other Comments:

--	--

If more space is required, please attach additional page(s)

12 Signature:

Have you informed the original equipment manufacturer of this failure? Yes No

Signature of Authorised Person:	Name: Date signed:
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NOTES

1. This Report must be completed and submitted to Trade & Investment Mine Safety within 7 days for all notifiable incidents subject to MHSR 2007 Clause 145(e), Clause 55(e) Clause 56(1)(n) of the Coal Mines Health and Safety Regulation (CMHSR) 2006 in relation to Mobile Plant only.

Clause 145(e) of the Mine Health and Safety Regulation 2007 requires notification of any incident or matter involving an uncontrolled explosion or fire.

2. This Ancillary Report is to provide a consistent approach for all mines.

Please contact your local NSW Mine Safety office if you require assistance completing the form.

NSW Mine Safety Offices located in coal mining regions

Hunter Region

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