

Fires on mobile plant

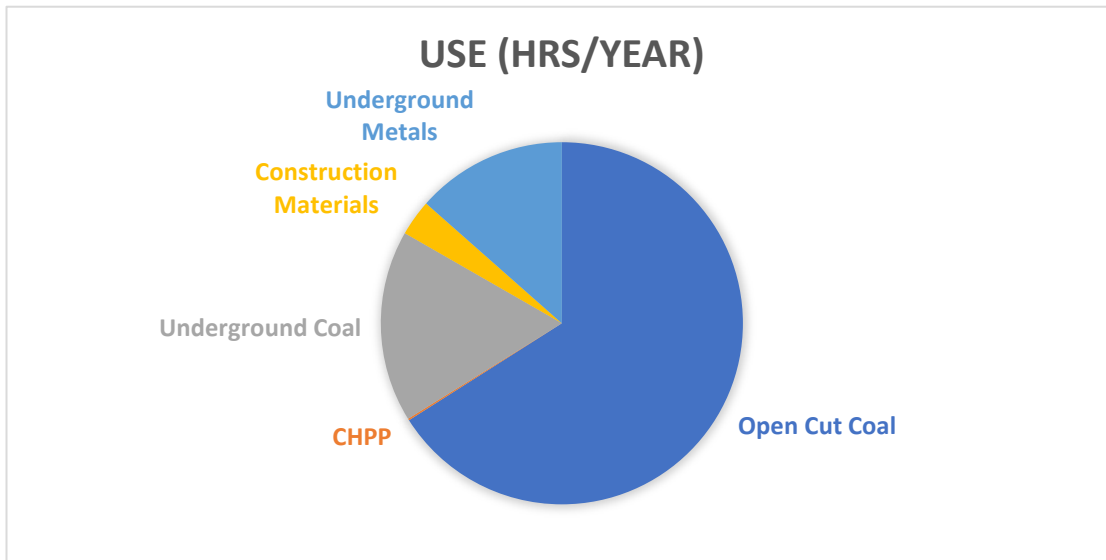
July - September 2018



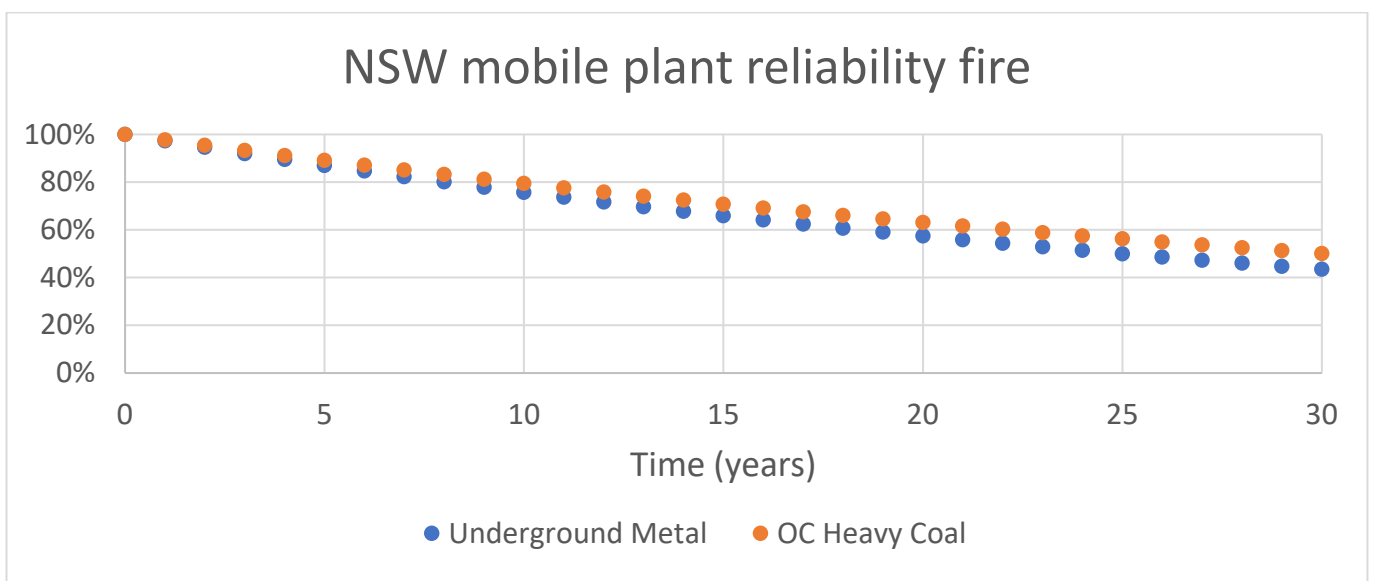
Photo1: Quarry fire.

Key observations

Fire data population normalisation: NSW mine fires on mobile plant have been put into perspective by correlating fire event data with recently completed NSW mobile plant fleet census data. A snapshot of the normalised data was presented at the 2018 Mechanical Engineering Safety Seminar in September. The data uses plant use hours and fire frequency to establish mean time between failure due to fire ($MTBF_{\text{Fire}}$). The $MTBF_{\text{Fire}}$ can be calculated at a high level to overview the performance of the NSW fleet or focused to a specific machine make and model. Reliability with respect to mobile plant fire can be calculated and the probability of fire graphed against time.



Mine type	Use (Hrs/year)	Averaged fires/year	Hours/fire
Open cut coal	10793700	51	213512
CHPP	25340	1	19850
Underground coal	2801258	0.3	10971594
Construction Materials	526803	7	79358
Underground metals	2205899	26	86398
Grand total	16353000	84	194089

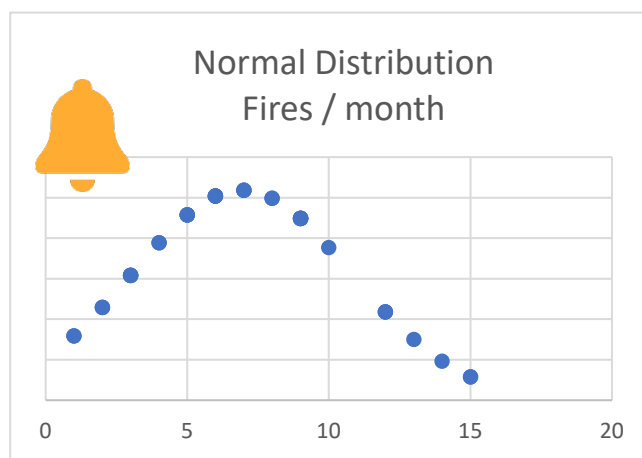


Data summary

2015	2016	2017	2018
49	67	112	78

Extrapolated 2018

94



<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
12	8	9	6	10	6	9	10	3	5		

Mine Type	January	February	March	April	May	June	July	August	September
Underground coal	0	0	0	0	0	0	0	0	0
Underground metex	3	0	1	2	1	1	2	0	3
Open cut coal	7	7	4	3	8	3	4	8	0
Surface operation	0	1	0	0	0	0	2	1	0
Quarry	2	0	2	1	1	0	1	1	0

Title Safety ancillary reports - fires on report date mobile plant

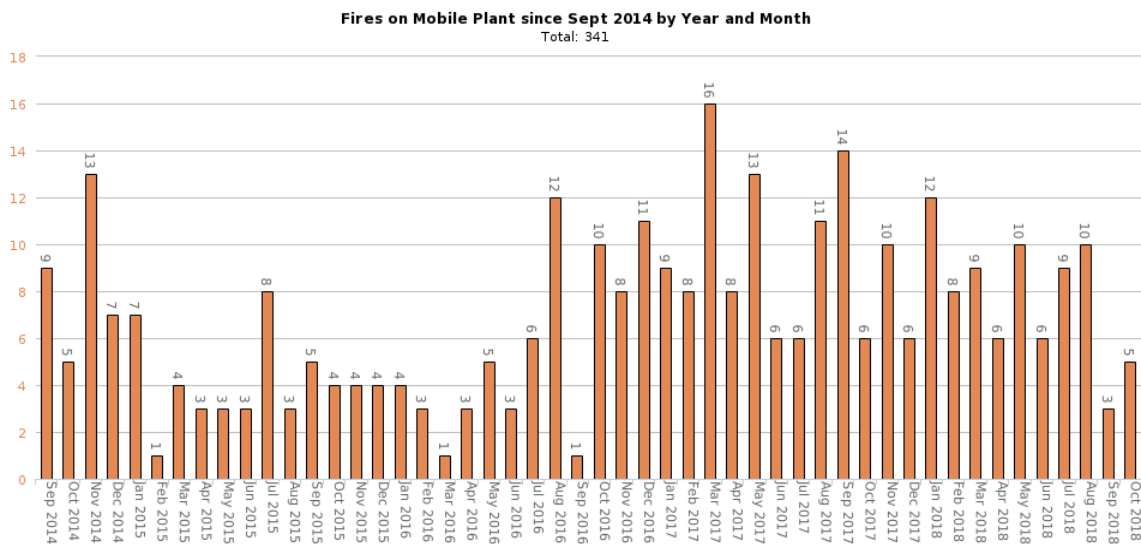
26/10/2018

Report details

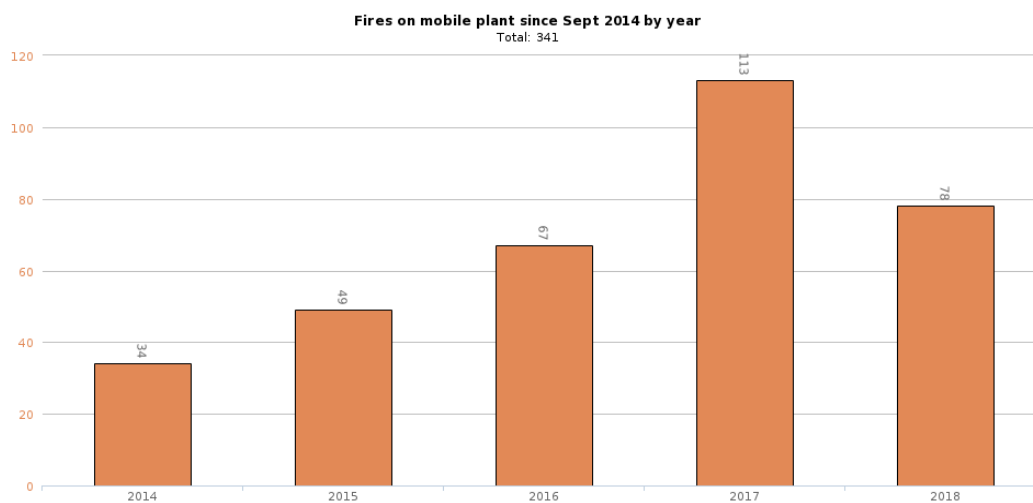
Fires on mobile plant since Sept 2014 - Last three complete calendar months and total

	Last three complete calendar months	Total
Safety incident - Ancillary (fire related to mobile plant)	22	341

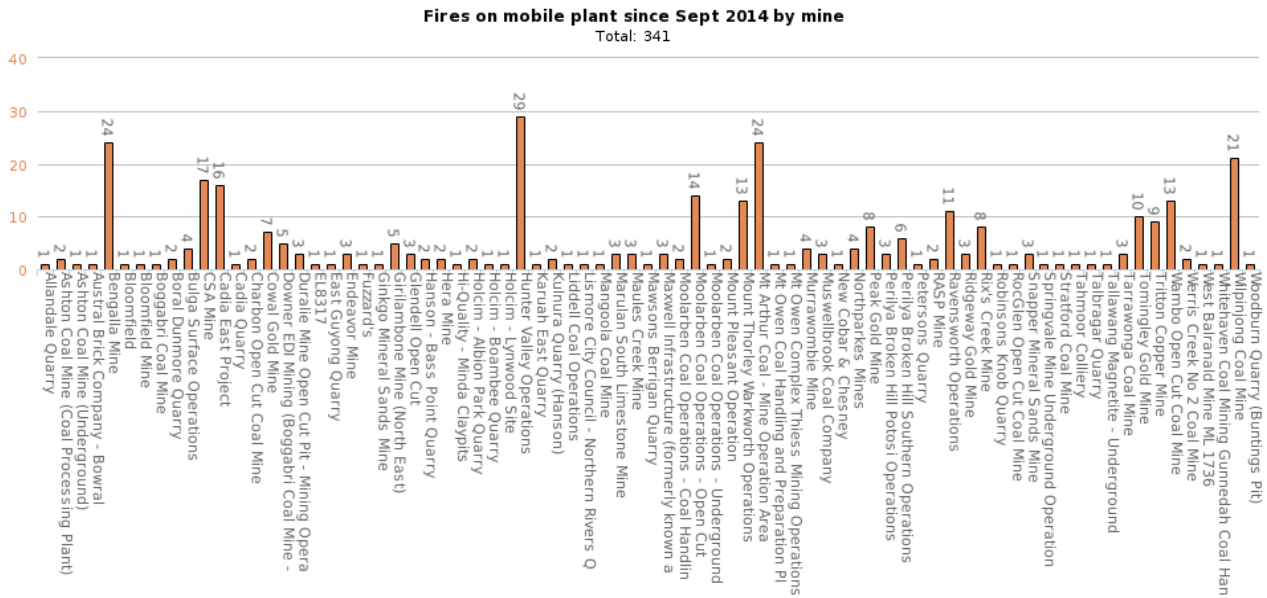
Fires on mobile plant since Sept 2014 by year and month



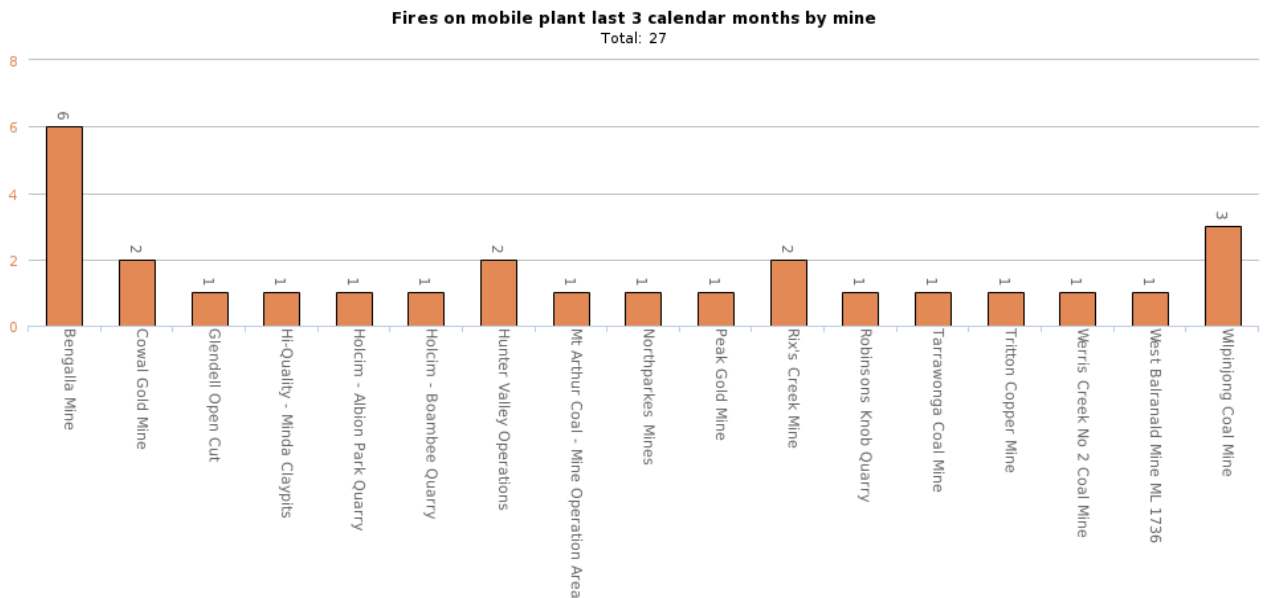
Fires on mobile plant since Sept 2014 by year



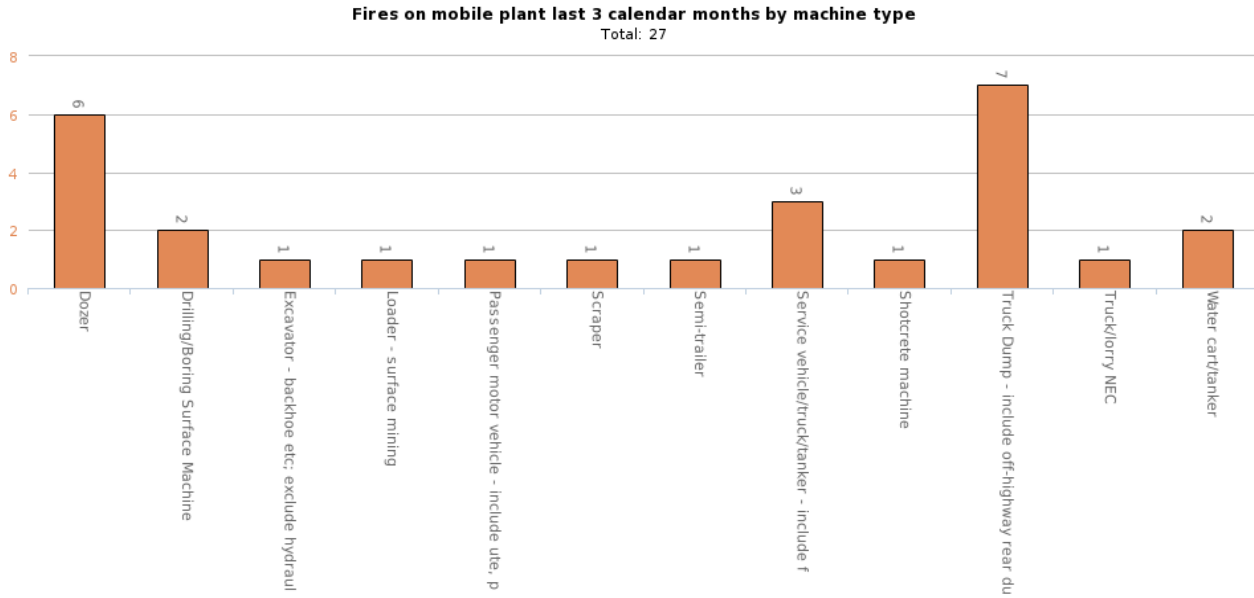
Fires on mobile plant since Sept 2014 by mine



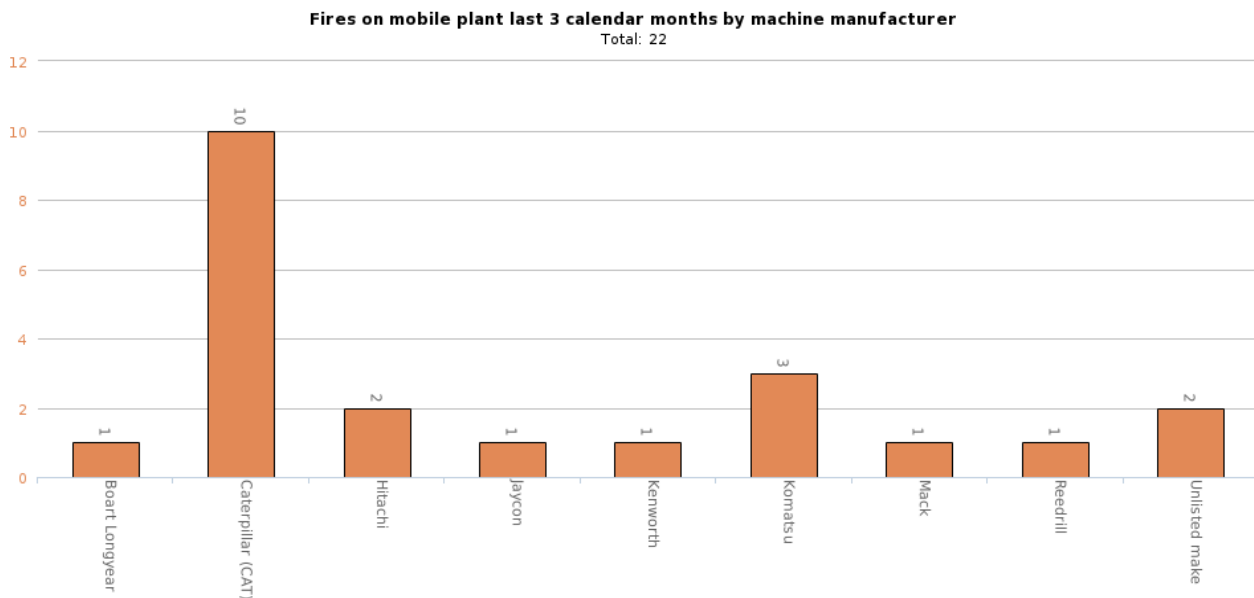
Fires on mobile plant last 3 calendar months by mine



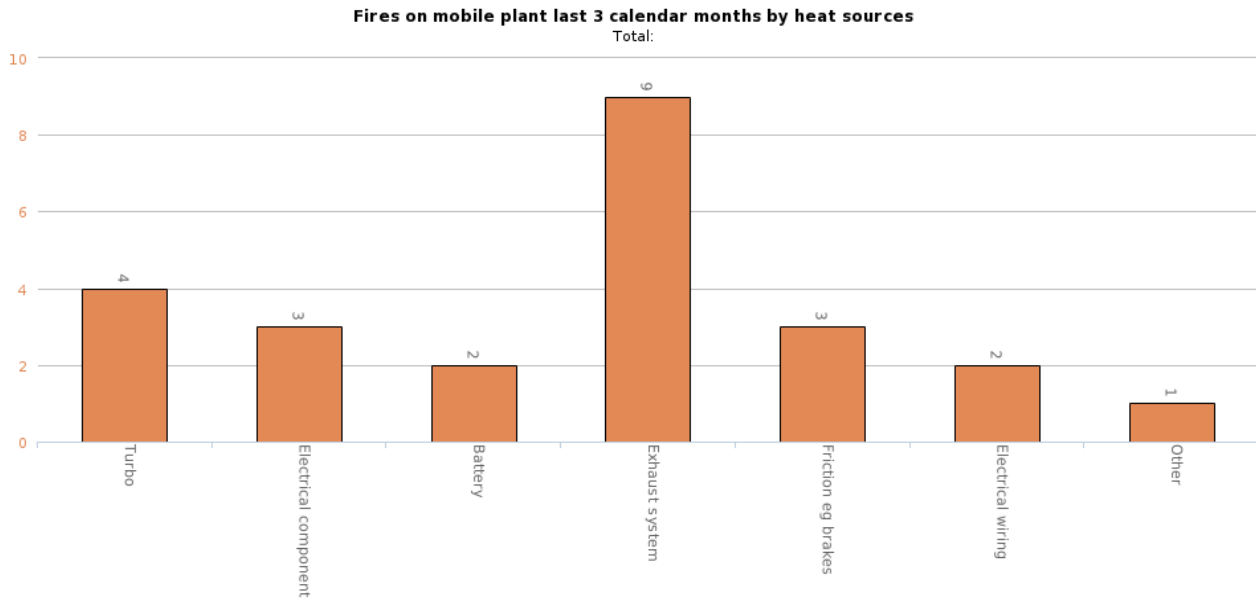
Fires on mobile plant last 3 calendar months by machine type



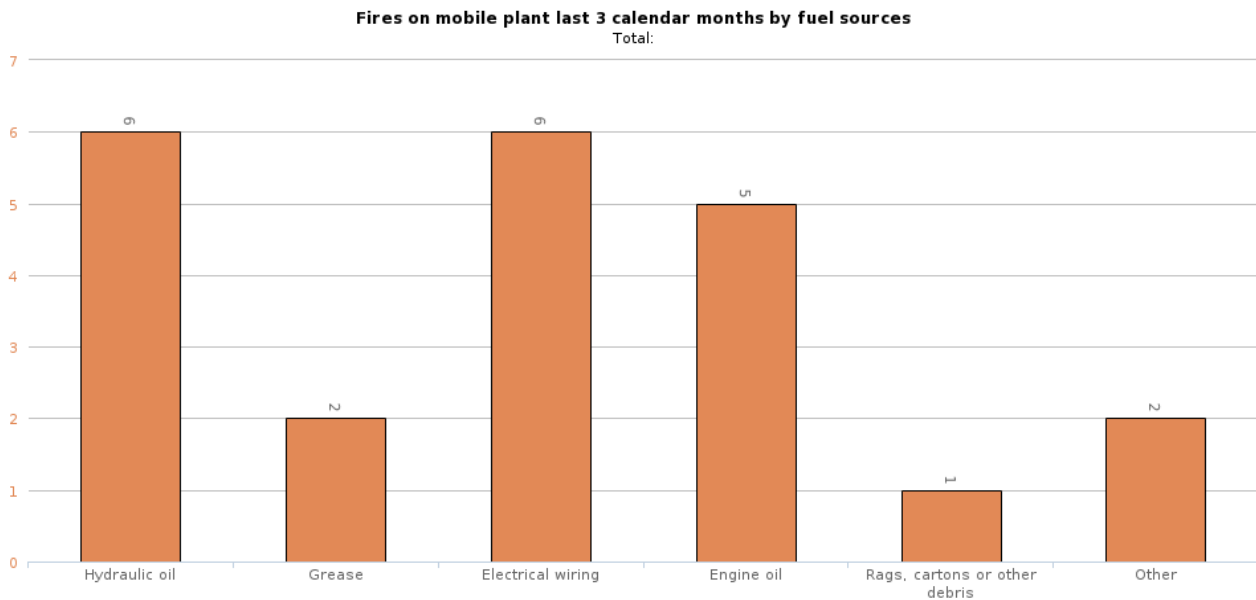
Fires on mobile plant last 3 calendar months by machine manufacturer



Fires on mobile plant last 3 calendar months by heat sources

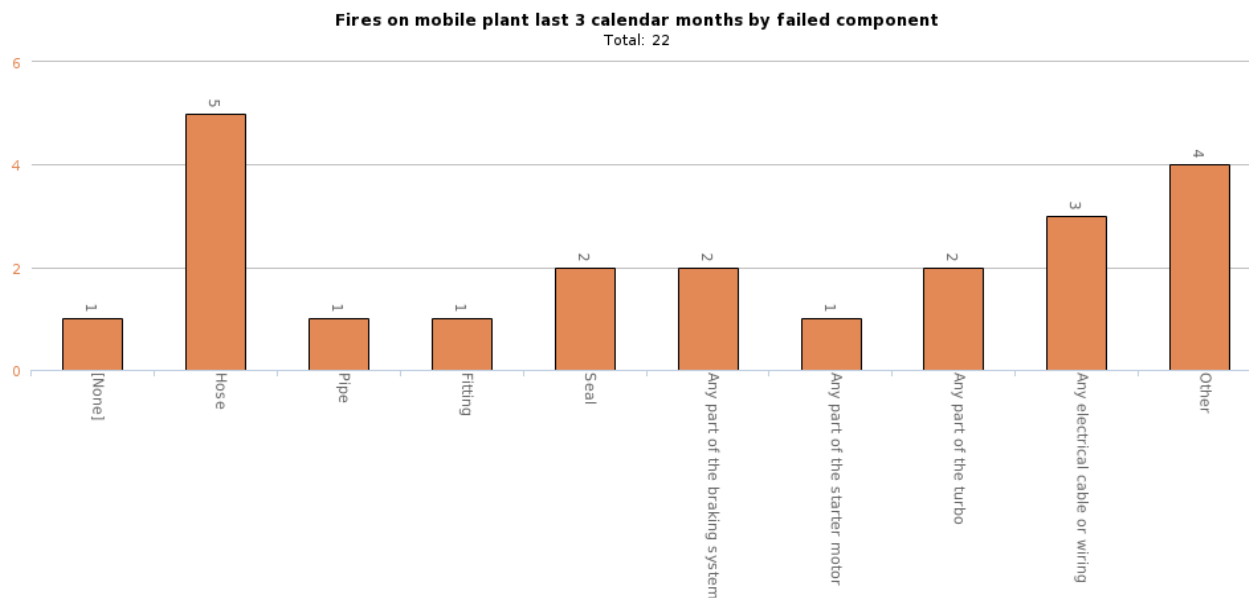


Fires on mobile plant last 3 calendar months by fuel sources



Report Admin

Fires on mobile plant last 3 calendar months by failed component



Fires on mobile plant last 3 months causal factors details

	Date of Incident	Event ID	Machine type	Machine manufacturer	Machine model	Causal factors comments
1	05/09/2018	SInAnc-2018/00155	Drilling/Boring Surface Machine	Reedrill	SKF-50	Review hydraulic hose management
2	04/09/2018	SInAnc-2018/00157	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Komatsu	830E	Failure within grids, combination of the following: <ul style="list-style-type: none"> Retarder system was modified to change from 14 grids to 12 grids and is thought to now be operating at the electrical loading limit. J model grids have a support removed that adds a failure mode. Installation practices for these grids was less than adequate in October last year, Komatsu procedure was not known to technicians.
3	03/09/2018	SInAnc-2018/00169	Dozer	Caterpillar (CAT)	D11T	Incorrect seal used in application.
4	28/08/2018	SInAnc-	Service vehicle/truck/ta	Caterpillar	773B	Pressure in the front brake system has resulted in the

		2018/00151	nker - include fuel/lube/pump truck, oil tanker, shotfirer's truck, concrete truck, etc	(CAT)		front brakes dragging.
5	24/08/2018	SInAnc-2018/00162	Dozer	Caterpillar (CAT)	D11T	On investigation it was identified that the left hand blade lift cylinder trunnion on the dozer nose cone fractured. This resulted in the lift cylinder mount and lift cylinder to break away from the nose cone. With the lift cylinder still being connected to hydraulic hoses which supply oil to the cylinder resulted in the hoses to be stretched from the weight of the cylinder. This lead to the hoses to rupture and release hydraulic oil resulting in oil to be sprayed through into the engine bay leading to a fire to occur.
6	22/08/2018	SInAnc-2018/00148	Drilling/Boring Surface Machine	Boart Longyear	LX600T	The starter motor had become stuck in the "on" position, causing to run continuously.
7	21/08/2018	SInAnc-2018/00173	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Hitachi	EH4000	Oil spilt (during B8 rocker cover removal/replacement) onto the adjacent exhaust manifold not being cleaned off prior to releasing the machine to production.
8	19/08/2018	SInAnc-2018/00172	Service vehicle/truck/tanker - include fuel/lube/pump truck, oil tanker, shotfirer's truck, concrete truck, etc	Unlisted make	B50D	The investigation found that the cause of the fire was oil from a previously failed turbo leaking through inadequately sealed exhaust joints into absorbent heat lagging. The oil-soaked lagging was not cleaned, replaced, or removed prior to LT003 being handed back to production. The ignition source was either leaking hot exhaust gases and/or exhaust surface temperature.
9	19/08/2018	SInAnc-2018/00174	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Hitachi	EH4000	Hose clamp securing heat shield sleeve to LHS rear turbo oil feed line clamp has come loose and rubbed the hose end elbow thin to the point where it has cracked releasing engine oil. The oil was ignited by the turbo and/or exhaust manifold.
10	16/08/2018	SInAnc-2018/00164	Dozer	Caterpillar (CAT)	D11T	Assessment and urgency of the defect management system requires improvement.
11	14/08/2018	SInAnc-2018/00147	Dozer	Caterpillar (CAT)	D11T	O ring not included in the Bill of Material when completing valve sets replacement.
12	09/08/2018	SInAnc-2018/00154	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Komatsu	830E AC	Please see attached RCA complete with causal factors included in the investigation report.
13	02/08/2018	SInAnc-2018/00170	Loader - surface mining	Unlisted make	FSC-100	On investigation it was found that there was a Positive 10 mm battery cable that had rubbed through on the chassis of the screen.

						The cable was encased with black flexible conduit around it but was packed in gravel were the wire had rubbed and caught alight.
14	30/07/2018	SInAnc-2018/00171	Dozer	Caterpillar (CAT)	D11	Lagging was missing from the LHS turbo exhaust pipe and the fire wire and conduit has touched the hot pipe in this area creating an ignition point. Evidence of fire on an adjacent rocker cover is believed to have been fuelled by residual oil and ignited by the conduit flame.
15	24/07/2018	SInAnc-2018/00145	Water cart/tanker	Caterpillar (CAT)	777F	Water leaking from water tank and coming into contact with pipe resulted in corrosion of the pipe. Corrosion lead to reduced wall thickness of the pipe leading to a crack forming on the pipe. This enabled hydraulic oil to escape from the crack and come into contact with the exhaust system.
16	17/07/2018	SInAnc-2018/00161	Service vehicle/truck/tanker - include fuel/lube/pump truck, oil tanker, shotfirer's truck, concrete truck, etc	Caterpillar (CAT)	CAT 730	Investigation of the area found that the source of the fire was a coolant leak from a heater hose running above the exhaust manifold. Once the truck was taken to the workshop the hose in question was pressure tested & was found to have a small pin hole in the hose spraying directly at the turbo.
17	16/07/2018	SInAnc-2018/00134	Truck/lorry NEC	Mack	Freightliner	On inspection a battery wire had arced to the hydraulic hose, causing an oil leak and igniting the oil.
18	16/07/2018	SInAnc-2018/00136	Shotcrete machine	Jaycon	Roboshot	In absence of visible fire source no causal factor has been identified
19	11/07/2018	SInAnc-2018/00133	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Caterpillar (CAT)	789C	Turbo failure
20	10/07/2018	SInAnc-2018/00132	Water cart/tanker	Caterpillar (CAT)	Cat 777 water cart	Brakes have been binding due to an unknown event so a full refurbishment of the front braking system will be undertaken.
21	02/07/2018	SInAnc-2018/00125	Semi-trailer	Kenworth	T409	Daracon Group updated operational SWMS regarding "no charging of remote batteries in truck" and communicated change to their drivers.
22	01/07/2018	SInAnc-2018/00144	Truck Dump - include off-highway rear dump truck and coal hauler dump truck	Komatsu	830E	Operator confusion resulted in the service brake being used instead of the retard system.

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