DANGEROUS INCIDENT

Fuel service truck catches fire at coal mine

Incident date: 24 November 2018

Event: Fuel service truck catches fire.

Location: Maules Creek Coal Mine, Boggabri, NSW

Overview

A fuel service truck caught fire at an open cut coal mine. Onboard fire suppression systems on the truck were unable to extinguish the flames because of diesel fuel flowing from the diesel tank breather vent system on the top of the fuel tank onto an ignition source. The vehicle operator escaped from the truck without injury.

Circumstances

The incident occurred about 4pm on 24 November 2018. A fuel service truck with a full diesel storage tank reversed and parked on a ramp that had been created to access an excavator on the bench. The excavator had run out of fuel and could not be moved to be refuelled.

The fuel truck operator exited the cabin and saw diesel flowing from underneath the filter on the front diesel tank breather vent on top of the diesel tank. Because of the incline, the diesel flowed from the breather vent onto the truck's engine compartment.

At ground level, the operator saw flames around the engine turbo. The operator unsuccessfully tried to extinguish the fire with a fire extinguisher.

Another worker activated the truck’s onboard fire suppression system, which failed to extinguish the fire that had now spread to the cabin area.

Several water carts were brought in to extinguish the fire. Diesel was seen to continue to flow from the front diesel tank breather vent after the fire had been extinguished.

Figure 1: View of the fuel service truck on the ramp after the fire. Photograph courtesy of the mine.

Investigation

The Resources Regulator conducted an investigation into the incident. Participants in the investigation included the equipment manufacturers and suppliers, the truck owner and the mine operator. The investigation identified:

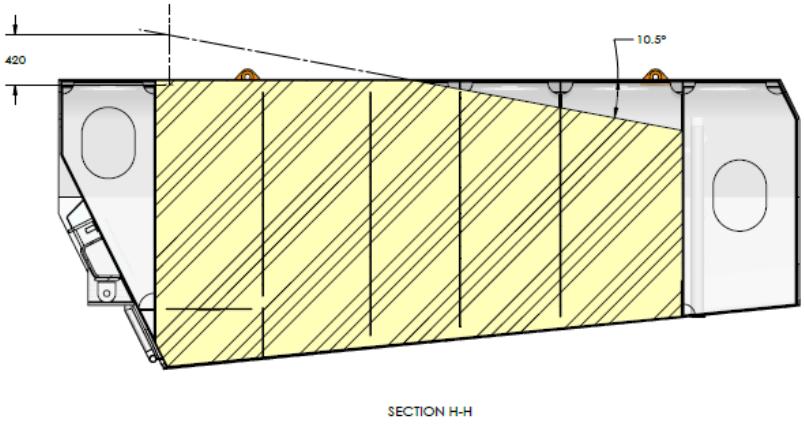
- → the diesel tank's ball float valve was raised on the support bracket to a position above the original equipment manufacturer's (OEM) specifications to increase the capacity of the diesel tank to 33,400 litres (OEM calculated)
- → the breather vent system was designed to allow air to vent in and out from the diesel tank during filling and discharge. The truck rollover anti-discharge valve was not designed to shut off the flow

Figure 2: View of burnt breather vent and the setting of the diesel ball float valve in the support bracket.

- → the full fuel tank, in conjunction with the ramp gradient estimated at 11.9° (mine survey), caused diesel to flow from the tank breather vent and on to hot engine components

- → there were no effective control measures to either contain and/or redirect the diesel spilling from either the breather vent or tank lid away from ignition sources
- → when the truck was filled to the maximum of 33,400 litres the angle of inclination for fuel to run out through the breather vent (420 mm above tank) is 10.5° (OEM calculated).

Figure 3: Side view of the tank at inclination of 10.5° at 33,400 litres to cause fuel to flow through the breather vent (OEM supplied drawing).



Recommendations

Mine operators must review:

- design arrangements of the ball float and breather vent settings on fuel service trucks to ensure that they meet OEM specifications
- maintenance practices of ball float and breather vent settings on fuel service trucks to ensure life cycle inspections and maintenance programs are effectively performed
- the principal hazard management plan (fire and explosion) and mechanical engineering control plan risk assessments for fuel service trucks to ensure control measures are effective to contain and redirect flammable liquids spilled from the top of the tank away from hot surfaces
- operating gradients of fuel service trucks to ensure they are within OEM design specifications
- change management systems to ensure any modifications of fuel storage and delivery systems on fuel service trucks are appropriately assessed and include consultation with the OEM.

Mine operators should also refer to:

→ MDG15 *Mobile and transportable plant for use on mines and petroleum sites*

NOTE: Please ensure all relevant people in your organisation receive a copy of this safety alert and are informed of its content and recommendations. This safety alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

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