



Incident Alert

Ammonium nitrate emulsion tanker trailer explosion

Summary of incident

The Department of Mines, Industry Regulation and Safety's investigation is ongoing. The information contained in this incident alert is based on knowledge and understanding at the time of writing.

On 24 October 2022, a tanker trailer carrying an ammonium nitrate emulsion (ANE) caught fire then exploded on the Great Central Highway, approximately 150 kilometres east of Laverton.

The road train consisted of a prime mover, a dolly and two aluminium tanker trailers containing approximately 34 Tonnes (rear trailer) and 27 Tonnes (front trailer) of ANE.

At approximately 9:30 am the driver noticed black smoke coming from the rear trailer. The driver stopped and attempted to extinguish a fire on the rear passenger side wheels of the rear trailer using two 9 kg dry powder extinguishers and a 9 L water extinguisher. Due to the intensity of the fire, the driver was unsuccessful.

The driver disconnected the dolly and rear tanker trailer and evacuated to a safe distance.

Emergency services and the mine site emergency response team attended the incident scene at a safe distance and cordoned off the roads.

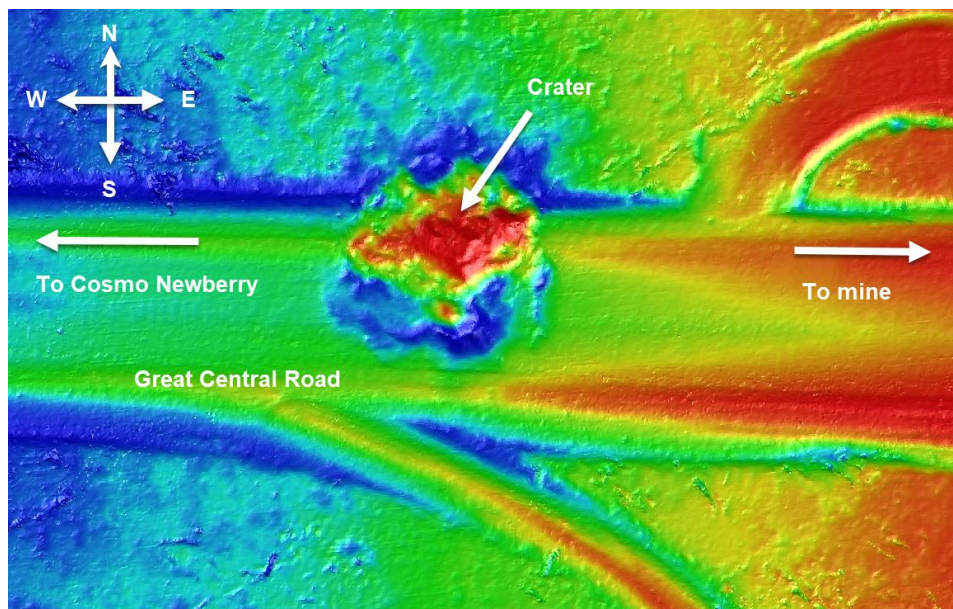
At 11:33 am, the tanker exploded. The explosion caused several spot fires around the site. No one was injured.



Drone image capturing aftermath of explosion. Photo courtesy of Gold Fields, Gruyere Joint Venture.

Preliminary findings

- The tanker trailer was of an approved tanker design and licensed under the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007.
- The trailer was serviceable with no apparent maintenance issues.
- The trailer was correctly loaded with authorised ANE.
- The activity was being conducted in accordance with company procedures.
- The driver was an authorised Dangerous Goods driver and appropriately authorised to conduct the activity.
- The vehicle was the third vehicle in a convoy of three trucks.
- Weather at the time of the incident was fine with northerly 25-30 km/hr winds. It was reported that whilst dust was kicked up from the convoy, as well as the incident vehicle and trailer, the dust was no more than would be expected.
- The vehicle had been travelling on unsealed roads for approximately 90 km, at approximately 25-30 km/hr, when the fire was first noticed.
- The transport company and the mine's emergency procedures were followed. These procedures are consistent with industry practice.
- Detonation of the ANE occurred two hours after the fire was detected.
- The trailer was completely destroyed.
- A crater, approximately 15 m x 17 m wide and 1 m deep was formed.
- Shrapnel was located around the blast location with an approximately 25 kg piece located approximately 800 m from the epicentre.
- Shrubs and trees to approximately 4 m high were snapped at ground level to a distance of approximately 40 m and branches 75 mm thick were snapped to a distance of approximately 150 m from the blast site.



Survey image of crater. Photo courtesy of Gold Fields, Gruyere Joint Venture.

Further actions

The Department's Dangerous Goods Officers attended the incident location and have taken samples for further analysis. The Department is attempting to identify the cause of the fire, the triggering event that caused the detonation and any other factor that contributed to the explosion. The Department is also reviewing the handling of the incident prior to the explosion for any potential improvements.

The incident highlights the consequences of a fire during transport of ANE and other like products. It reinforces the need for drivers, vehicle owners and operators to be aware of the consequences regarding vehicle fires, and in particular tyre fires. It also highlights the importance of good emergency procedures and of following them in an emergency.

All operators involved with the storage, handling and transport of all types of explosives are encouraged to review their procedures and practices to ensure that there is a clear understanding of the steps necessary to prevent fires and how to respond if a significant fire occurs.

Further information on this incident will be released following additional enquiries.

The Department would like to acknowledge the assistance provided to the investigation by Gold Fields, Gruyere Joint Venture staff and MACA Ltd.

This Incident Alert was approved for release by the Chief Dangerous Goods Officer.