



VUL-SWP-072a-014-Operation and Hazard Management

STANDARD WORK PROCEDURE (SWP)	
Description	Operation and Hazard Management
Site	Vulcan Mine
Department	Maintenance – Tyres
Purpose	The purpose of this SWP is to provide a documented way of working to achieve an acceptable level of risk. The steps outlined pertain to the titled task only. All other SHMS requirements such as SOPs must be followed e.g.: VUL-SOP-065-PPE, VUL-SOP-089-Dust etc.
1. Managing Tyre Incidents and Emergencies	
All incidents are to be facilitated in accordance with VUL-SOP-015-Incident Report and Investigating. If a defect is identified or suspected by an operator during an inspection, the suspect area of the component shall be clearly marked and supporting documentation completed. If during removal of a wheel or rim assembly from a vehicle or machine, a defect is discovered, the defective component is to be removed from service. If required, it may be sent for testing and repairs. If lock rings are damaged or deformed, they are not to be re-used. Cracked or damaged nuts or studs and stretched studs are not to be re-used. Where there is evidence of cracking or movement of a wheel or rim assembly, the removal process for single or dual fitment should be stopped and the tyre(s) immediately deflated to zero. Unsafe, damaged, non-repairable wheels and rims or their components are to be permanently rendered unusable by cutting apart, to prevent the component from being inadvertently re-used. Prior to loosening securing fasteners, any tyre fitted to a wheel or rim assembly should be deflated to zero pressure or nominal handling pressure. If the pressure is to remain above zero, undertake a risk assessment to consider the risk from the hazards. This assessment should include comparison of the handling difficulties of assemblies at zero pressure with catastrophic failure or disassembly of wheel or rim components at pressures above zero. For dual assemblies, specifically multi-piece rims, both tyres shall be deflated. Tyres and Rims that have been contacted in any sort of accident shall be inspected by a competent person before reuse. Hazardous tyre management must be risk assessed and supported by detailing the requirements for site to manage minimum exclusion zone (distance) and time frame (hours) before tyre fitters are permitted to inspect the tyre, wheel, and rim assembly.	



2. Hot Tyre

Employees involved in the inspection of tyres and rims and changing wheels should exercise caution with tyres heated by internal or external sources (as there is a risk of a violent explosion (e.g.) lightning strike, separation, brake fire, wheel motor failures, machine contact with powerlines etc.

Tyres may heat up or become 'hot' by either internal or external sources, including, but not limited to:

- operating outside TKPH / OEM limits;
- poor road condition;
- potentially overloaded tyres, including duals;
- lightning strike;
- separation;
- brake fire;
- wheel motor failures;
- machine contact with powerlines.

Hot tyres are at risk of (a violent) explosion. Actions that can be taken to mitigate hot tyres include:

- not operating above OEM limits;
- redirect vehicle to slower or shorter circuit;
- lower payload until alarms have deactivated
- tyre pressure and temperature, taken manually, have reduced to acceptable levels (normal hot running pressure)

Where a vehicle has a suspected/confirmed hot tyre(s):

- The vehicle shall be parked a minimum 300 meters clear of all activity; pre designed "hot tyre" bay is preferred location for this.
- Equipment operator(s) evacuated from the equipment;
- Equipment shall be quarantined for a minimum 24 hours;
- A Competent Person shall assess the tyre condition and effect of temperature and monitor the vehicle until any visible smoke has ceased;
- Temperature testing shall be conducted to determine if excessive internal heating is present/escalating; and
- When the tyre has cooled, the equipment will return to the tyre bay and the tyre will be removed.

A hot tyre caused by tread separation will be removed from service.

When a piece of equipment or plant is struck by lightning, all tyres are to be treated as 'hot'.

3. Side Wall Bubble

A side wall bubble may be identified by:

- Smell of hot rubber due to separation
- Visible smoke or bubbles; and
- Series of crescent shaped marks on the tyre near the shoulder, sometimes known as 'eyebrow' marks.

There are a number of actions to mitigate the associated risks of a side wall bubble, including:

- Parking the affected vehicle in safe area, as soon as possible;
- Tyre technician to assess the tyre condition and effect of temperature;
- Monitor vehicle until visible smoke has ceased;



- Water cart may assist in cooling the tyre, when the tyre has cooled, the vehicle can be moved to designated area and the tyre removed;
- TPMS will show if excessive internal heating is present.

If a side wall bubble is discovered, it should be marked for identification and size. If the bubble enlarges from the initial size mark, the tyre manufacturer should be consulted to determine the action required.

4. Tyre Fire

Tyre fires can be caused by a number of factors, including but not limited to:

- External heat source such as hot spoil, ground coal spontaneous combustion;
- Vehicle fire
- Spilt fuel or oil
- Hot work on truck
- Cut separations in tyres
- Friction from delamination
- Tyre rubbing against other components of the truck; and
- Excessive haul distance or payload (TKPH).

A tyre fire is evident by smell, smoke, and flames. In such an event:

- The vehicle shall be parked a minimum 300 meters clear of all activity
- Equipment operator(s) evacuated from the equipment
- Deluge fire where safe to do so, (using water cart cannons, reversing towards the fire); and
- Equipment shall be quarantined for a minimum of 24 hours.

If practical, burnable valve extensions should be fitted to Heavy Earth Mover tyres to allow air pressure to be release in the event of a serious fire.

5. Electrification, Arcing, Internal Tyre Fire

In the event of contact with electrification, including powerlines or arcing, the following shall apply:

- The vehicle shall be parked in a safe location, a minimum 300 meters clear of all activity;
- The Electrical Engineering Manager (**EEM**) immediately contacted to request Electricity Supplier (Ergon **1300 851 242**) complete isolation requirements; and
- Equipment operator(s) evacuated from the equipment.
- Equipment shall be quarantined for a minimum of 24 hours.

6. Unable to Deflate

The following alternative deflation methods must be risk assessed and approved by the Maintenance/Asset Manager. The tools used in these methods must be designed to prevent gas injection injury.

- A competent person will insert a probe to achieve deflation.
- If this is unsuccessful, attempt deflation by removing valve, or fusible link/burst disc.
- As a last resort, consider spiking (i.e., jack up and remotely lower onto a hollow spike, or reverse vehicle onto a plate with a hollow spike at an angle).