DP - 2

TIRES & RIMS

OBJECTIVE:

To prevent harm related to tire and rim events to ALARP, including consideration in design for foreseeable human error and material failures.

GENERAL OUTCOME:

The intended design outcome should include/consider:

- Physical size and weight of tires
- Stored pressures
- Tire handling equipment and tools

with respect to handling, affixing to the vehicle, and assembly of wheels (tires & rims) of rubber-tired equipment

EMESRT

Potential Unwanted Events (PUEs)

2.1 **Harm due to uncontrolled release of pressure from the tire and rim assembly during operation and maintenance due to:**

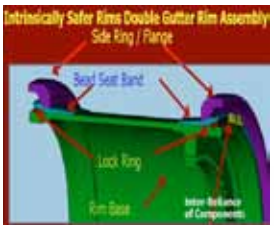
a. Overly complicated rim assembly systems that drive unwanted behaviours such as

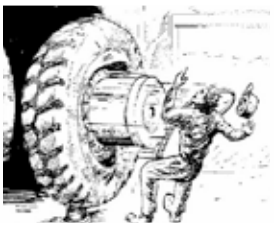
i. Failure to remove pressure from tires

ii. Failure to follow the correct procedure or sequence when attempting to maintain or remove them

b. Inter-reliance of components

SURFACE





UG COAL

UG HARD ROCK

Potential Unwanted Events (PUEs)

2.2 **Crush injury during maintenance activities due to:**

a. Physical size of the wheels

b. Need to have people working inside the arms of tire manipulators

c. Impractical and inaccessible jacking points

SURFACE

EXPLORATION DRILLING

Potential Unwanted Events (PUEs)

2.3 Strains and sprains during maintenance activities.

SURFACE

Potential Unwanted Events (PUEs)

2.4 Chronic health implications (e.g. musculoskeletal disorders (MSDs), white finger, hearing loss) from high frequency use of maintenance tooling.

SURFACE

Potential Unwanted Events (PUEs)

2.5 Harm due to abnormal rim condition that becomes evident only when the rim fastening system is released.

SURFACE

Potential Unwanted Events (PUEs)

2.6 Harm due to assembly failure from mismatched components on multiple component rim assemblies.

SURFACE

Potential Unwanted Events (PUEs)

2.7 Harm from pyrolysis / explosion of the tire and rim assembly due to e.g. improperly fitted tire/rim under correct inflation pressure.

SURFACE

UG HARD ROCK

Potential Unwanted Events (PUEs)

2.8 Harm due to

a. wheel nuts falling off
b. stud failure due to over-torque
c. failure to retorque some time after fitment

SURFACE

Potential Unwanted Events (PUEs)

2.9 Harm due to tire or rim failure occurring because there is no provision for repair history or previous duty to be linked to individual tires and rims.

SURFACE

Potential Unwanted Events (PUEs)

2.10 Harm due to tire operating condition becoming critical without the operator's knowledge.

SURFACE

Potential Unwanted Events (PUEs)

2.11 Musculoskeletal or crush injury caused by mounting and dismounting of spare tires from storage or carriers.

SURFACE