



EXPLOSION OF SPLIT-RING TYRE ASSEMBLIES

INCIDENT

On two separate occasions split-ring tyre assemblies exploded when trucks were operating under normal conditions. The explosions resulted in components of the multi-piece rim assemblies being projected a considerable distance with the potential to cause serious or fatal injuries to mine personnel.

CAUSE

A comprehensive study/analysis of these two incidents by an expert team concluded that the failures were most probably due to one or a combination of:-

- Reuse of damaged components
- Use of incompatible components
- Tyre low pressures (under-inflation)
- Incorrect tyre to rim assembly
- Abnormal operating conditions

COMMENTS AND PREVENTATIVE ACTION

Manufacturers of multi-piece rims list a number of important procedures:

- **Do not** use a hammer or any other object to force rim components in place.
- **Do not** attempt to take rim components apart on inflated tyres.
- **Always use a clip-on-chuck** that permits a person to stand clear of the potential path of rim components when inflating tyres on these rims.
- **Always deflate the tyre** before removing a wheel from an axle and before removing the tyre from the rim, by removing the valve core.
- **Do not** rework or reuse damaged rim components.
- **A rubber-type lubricant must be applied** to the tyre bead and the contact surfaces of the rim during assembly of wheel and inflation of tyre.
- **Whenever possible tyres must be inside a cage during inflation.** If this is not possible all personnel must stand well clear of the tyre and rim components during tyre inflation.
- **Do not** rest or lean any part of your body or any equipment against the cage during tyre inflation.
- **Do not** inflate a tyre above 35 kPa whilst it is outside of a cage, unless the area can be isolated.
- **Always inspect the tyre** after it has been inflated whilst it is still in a cage to ensure all components are correctly fitted.

In addition to these recommended procedures it was recognised that “Sur-Loc” bands which are welded to bead seat bands on some of the multi-piece rim assemblies can cause obstruction to proper visual inspection of the fitment of lock-rings. If the “Sur-Loc” bands have been hammered, the resultant burring and/or deformation can interfere with the fitting of the lock-ring and can move the lock-ring out of the correct position during tyre inflation.

Recommendations are also made about the use of special tools to check the profile of lock-ring grooves and lock rings to avoid incidents of this type.

For more comprehensive information about off-highway rims and wheels maintenance and repair reference should be made to Australian Standard AS4457.

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