

Date: May 2014

Risk of derailment because of threat overheating wheelset bearing box

Description of the incident/accident

A rail tank car loaded with a flammable gas was blocked by the railway operator because of an overheated axle bearing box.

The rail tank car had to be unloaded and the wheel set was replaced on site.

Root cause:

Investigation showed that one of the 3 bolts inside the bearing box had come out its bolt hole. The head of the bolt had come off the stem and both parts had been flying around the bearing box at high speed causing the overheating of the box. The two other bolts were seriously bent due to the high stress forces generated in the absence of the 3rd bolt. The overheating caused immediate rust formation on the bearing box.

As the rtc had been inspected by two inspectors before departure, it is assumed that the overheating had started en route to the next destination (100 km route). Though the rtc, during this journey, passed a few hot axle box detectors, none of these triggered a high temperature alarm.

The 3 bolts were of the 'Verbus Ripp self locking

type'. If not tightened to the right torque setting, these bolts tend to come loose after a while.

Most rtc construction companies have therefore switched to bolts with locking plates ("Sicherungsblech").

Learning Points:

This technical failure can potentially cause an axle bearing failure followed by a derailment.

Bolts of the Verbus Ripp type must be replaced by bolts with locking plates during each wheelset revision of the type IS2 (full revision) and IL (revision of bearings)

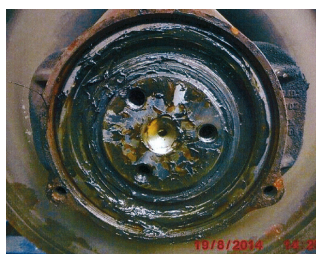
Preventive action:

Check what type of bolts are fitted in the axle bearing boxes and if necessary, replace them by bolts with locking plates during the next entry of the rtc into the workshop for check up of the rtc and revision wheelset of the type IS2 (full revision) and IL (revision of bearings)

RTC inspectors and loading- unloading operators must pay extra attention to the visual condition of the axle bearing boxes (see pictures)



Rust formation due to overheating



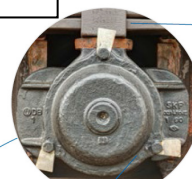
Damaged bolts



Verbus Ripp self locking bolt



Bolt with locking plate



OK



NOT
OK