

Collision between a X2000 train and a heavy road rail vehicle

Lessons learned as infrastructure manager



TRAFIKVERKET
SWEDISH TRANSPORT ADMINISTRATION



Guardian Angels in Kimstad, Hestra och Tranås

No safety plan for adjacent track

Lack of knowledge and education



2 minutes earlier:
Track cleared for traffic



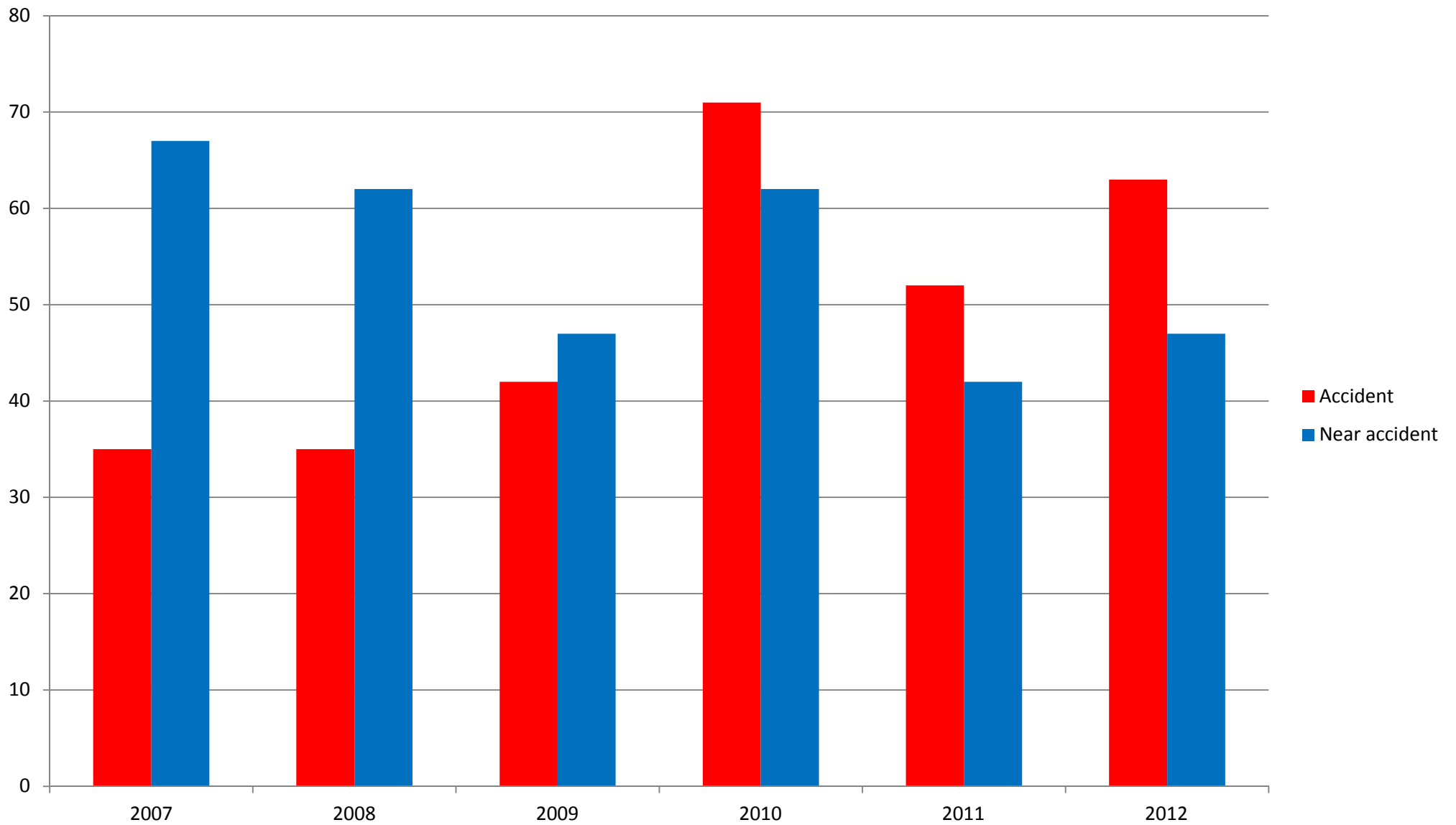
Säkerhetsbrister vid dödsolyckan i Kimstad

Brister hos Trafikverket Haverikommissionen har nu lämnat sin rapport om tågolyckan i Kimstad i september 2010 då en person omkom när en grävlas krockade med ett X2000.



Are rules not followed?

The greatest risk of catastrophic events



Do we have a guardian angel?



Structural gauge ca 3400 mm
(ends about 1 m outside the rail)

Safetyzon 2,2 m

3-3,5 m

Structural gauge ca 3400 mm
(ends about 1 m outside the rail)

1,2 m

Safetyzone 2,2 m





Speed 133 km/h

Distance between tracks 3,22 m.



A number of causes have had a negative impact on the course of events but were not decisive

- Infringement of the trains safety zone was not included in the risk analysis, neither in the the OHS-plan
- The driver had not been informed of Rules for guided vehicles (BVF 929)
- There is no requirement that drivers of guided vehicles need to know the rules for track work (BVF 923)
- The Supervisor did not have full view of the work site
- No access ramp was used



The contractors took action

- The establishment and un-establishment of guided vehicles/guided tools only allowed when protection/closed traffic is provided on the adjacent track
- Maximum speed 40 km/h will be organised on adjacent tracks during the work. *This was abolished when the Transport Administration released the enhanced measures/rules*
- Installation of another camera showing the front of the guided vehicle and the wheels position relative to the rails
- Safety education for all drivers of guided vehicles and tools



Rules changed in response of the accident

- Speed reduction – 70 km/h past a workplace
- If there is a possibility of interference of the safety zone – traffic shutdown on the adjacent track
- Track warning is only allowed at tracks with maximum speed of 120 km/h
- Track warning is not allowed at operational sites with more than 4 tracks
- These measures strengthens the normal requirements set by the rules



New rules again

- A documented risk assessment should always be carried out before work on the track, the risk assessment must also contain a planning of safety on adjacent tracks
- Possibility to use outer track warning withdrawn
- Risk assessment - train warning or traffic shutdown



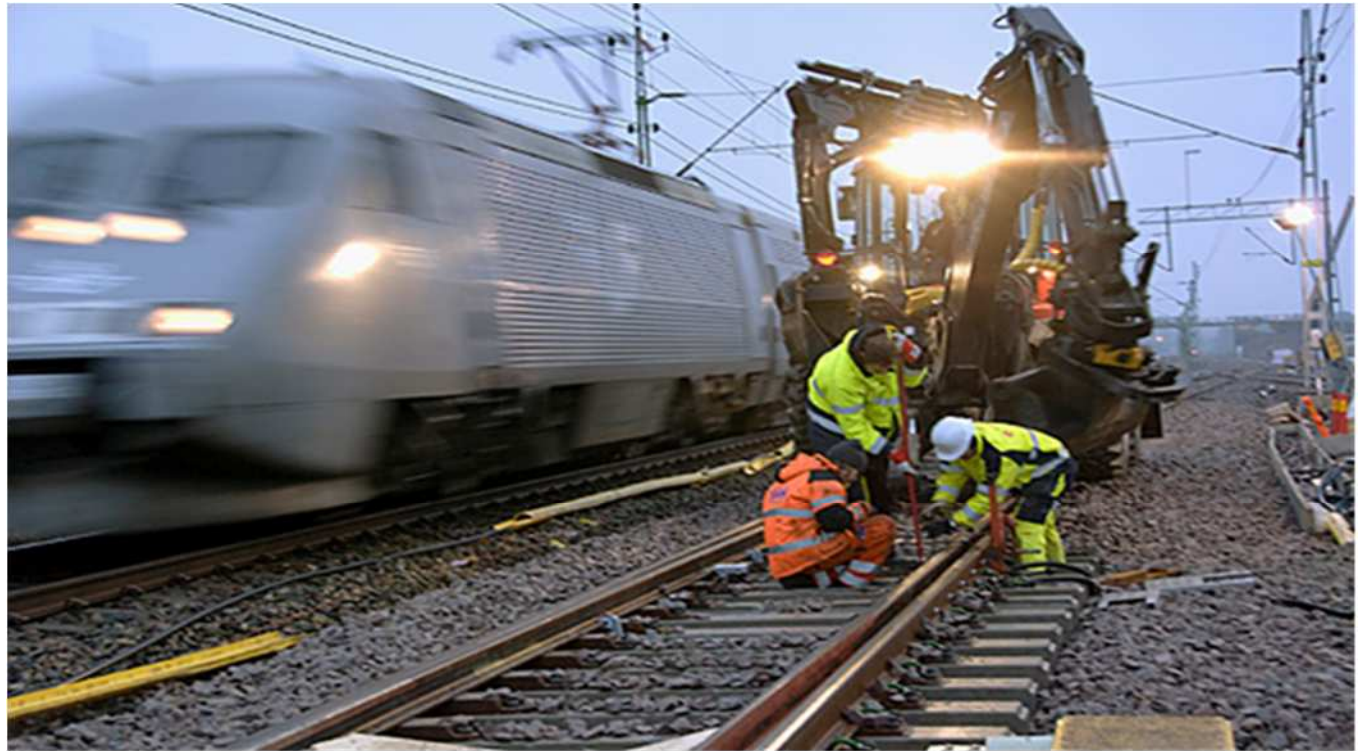
New rules for heavy road rail vehicles

- New role description for Supervisor and Operator
- Education/traning for Operator
- Risk assessment is mandatory
- Self sustaining vehicles should have brakes
- Stopping distances
- Daily “functions check” expanded
- Use of ramps to get on and off the track



More work on the way

- Safety Culture 2013-2014
- Protection for the adjacent track
- Less waiting time beside the track
- New way of planning procurements where were safety is a prerequisite for the work



... and in my humble opinion....

- We need to stop seeing maintenance as a competitor to trains and instead understand that it is a prerequisite for traffic... No maintenance – no traffic
- We need to think about whether working weeks is a good model – by that I mean that if we were to pre-determine when and how the track closes for maintenance work.

This should also reduce the number of emergency repairs

- If traffic is allowed on adjacent tracks speed reductions are necessary



Thank you for listening!

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