Submitted by the expert
from Norway

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Provisional agenda item 11

Statens vegvesen
Norwegian Public Roads Administration

Vehicle stability systems and tyre explosion

Safety recommendation from
Norwegian Safety Investigation Authority (NSIA)

By Norwegian Public Road Administration

Statens vegvesen
Norwegian Public Roads Administration

Norwegian Safety Investigation Authority

Link to report summary:

[Report on run-off-the-road accident on the RV 159 road in Lørenskog on 14 May 2021 | nsia]

Avgitt mai 2022

RAPPORT VEI 2022/03

Utforkjøringsulykke med vogntog på riksvei 159 i Lørenskog 14. mai 2021

Figur 4: Sluttposisjonen og skadene til lastebilen etter kollisjon med brupilaren som stod i midtdeleren mellom kjøreretningene. Foto: SHK

Statens vegvesen
Norwegian Public Roads Administration

Safety recommendation ROAD No 2022/09T

The accident that took place on the RV 159 road in Lørenskog on 14 May 2021 occurred when the left tyre on the front axle of a fully loaded heavy goods vehicle punctured at a speed of between 80 and 90 km/h. The driver of the vehicle died. The explosive puncture caused the vehicle to veer sharply to the left, and it was not possible for the driver to keep the vehicle in its own lane. The vehicle was registered as an off-road vehicle (N3G) and had been driven on different types of surfaces. The NSIA believes that the scope of damage could have been reduced by introducing technical solutions or driver support systems that enable drivers of heavy vehicles to make a controlled stop if the steering tyre on the front axle explodes.

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Can vehicle stability be supported by emergency systems after a tire explosion?

Is ESC or ESF active after a tire explosion?
From Reg. 79:

2.3.4.3. "*Emergency Steering Function (ESF)*" means a control function which can automatically detect a potential collision and automatically activate the vehicle steering system for a limited duration, to steer the vehicle with the purpose of avoiding or mitigating a collision, with:

(a) Another vehicle driving[2] in an adjacent lane:

(i) Drifting towards the path of the subject vehicle and/or;

(ii) Into which path the subject vehicle is drifting and/or;

(iii) Into which lane the driver initiates a lane change manoeuver.

(b) An obstacle obstructing the path of the subject vehicle or when the obstruction of the subject vehicle's path is deemed imminent.

ESF shall cover one or more use cases from the list above.

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Can vehicle stability be supported by emergency systems after a tire explosion?

Could MRM or EM support vehicle stability after a tire explosion?

From Reg. 157

2.7. "*Minimum Risk Manoeuvre (MRM)*" means a procedure aimed at minimising risks in traffic, which is automatically performed by the system after a transition demand without driver response or in the case of a severe ALKS or vehicle failure.

2.8. "*Emergency Manoeuvre (EM)*" is a manoeuvre performed by the system in case of an event in which the vehicle is at imminent collision risk and has the purpose of avoiding or mitigating a collision.