

This document is a translation of the original assessment in Swedish by SHK of the response to the recommendation. In case of discrepancies between this translation and the Swedish original text, the Swedish text shall prevail in the interpretation of the assessment.

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The Swedish Accident Investigation Authority's report RJ 2019:02

On 27 March 2019, the Swedish Accident Investigation Authority (SHK) published the report RJ 2019:02 regarding the derailment of a freight train in Ludvika, Dalarna County, on 12 October 2017.

The report contained a total of ten recommendations, of which three were directed to Green Cargo AB.

Recommendation RJ 2019:02 R1

Green Cargo AB was initially recommended to test the coil springs on type V5 locomotive at e.g. periodic maintenance to ensure proper functionality.

In its response to the recommendation, Green Cargo AB has stated that they are working to introduce checks of coil springs and shock absorbers in conjunction with Overhaul 3 on type V5 locomotives. The interval for Overhaul 3 is 48 months. These checks are expected to be introduced in the overhaul programme no later than by year-end 2019.

The changes that Green Cargo is planning in the overhaul programme can be considered to correspond well to the aim of the recommendation. The recommendation is thereby considered implemented and the response is deemed satisfactory in this part.

Recommendation RJ 2019:02 R2

Green Cargo AB is furthermore recommended to evaluate whether the V5 locomotive, after modification with angled shock absorbers, receives sufficient vertical damping capability, in relation to the original design and the locomotive's suspension.

In its response to the recommendation, Green Cargo AB has stated that it is difficult to determine whether the vertical damping capability is sufficient. Considering the large number of faults the company has now realised exist in the facility, and considering earlier similar accidents where several independent, directly consecutive track faults have caused derailments, the company has taken the initial direct measure to restore the vehicles to their original setup. This has been done pending regulations for how different directly consecutive track faults

shall be assessed and possible adjustments in what basis is needed for an approval. SHK finds that the measures taken by Green Cargo AB can be considered to resolve the problem of the deteriorated vertical damping capability due to the reangling of the shock absorbers. The recommendation is therefore considered implemented and the response is deemed satisfactory in this part.

Recommendation RJ 2019:02 R3

Green Cargo AB is finally recommended to review the conditions and values used in simulations and test runs in the event of changes to vehicles to ensure that less favourable conditions are also tested.

Green Cargo has responded in this part that in the simulations and test runs preceding and following the reconstruction, Green Cargo has taken into consideration the values stated in regard to the time-dynamic properties set out in standard EN 14363:2005 in TSD (1302/2014). These values set out in the standard constitute the regulations.

SHK noted in the report that certain values were unknown in the simulations carried out. The test run was furthermore done on a stretch that generally had a better track situation than the stretch involved in Ludvika. Certain conditions were also unknown during the test, such as actual dampening properties and feather constants for the test locomotive and the reference locomotive alike. It then emerged in the investigation that a wheel profile other than the one that should be fitted for the V5 locomotives was used for the testing (see p. 64 of the report).

Even if the standard referred to by Green Cargo states that it is not necessary to calculate and test the moving dynamics in regard to the worst possible combination of faults, it does state that testing must include impaired dampening and be conducted on a track corresponding to the planned operating area. In SHK's view, it is important for safety reasons that the tests are carried out under as realistic conditions as possible.

In its response, Green Cargo only states that it implements the applicable European standard. However, nothing in the response indicates that the company intends to review how the standard is implemented and interpreted in practice and how the tests are actually carried out. Against this background, the recommendation cannot be considered implemented and the response is deemed unsatisfactory in this part.

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