



Weight Allowance Reduction for Quad-Axle Trailers

CVSE Director Decision



Ministry of
Transportation
and Infrastructure

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SYNOPSIS

The Ministry of Transportation and Infrastructure is considering the reduction of legislated maximum weight allowance for commercial trucks and trailers from the current 34,000 kg to 31,000 kg. Background and analysis, followed by the CVSE Director's decision is outlined within.

INTRODUCTION

Before the decision to implement the weight reduction to 31,000 kg or keep the maximum legal weight allowance at 34,000 kg, the Ministry of Transportation first needed to better understand the implications of the weight reduction by assessing the potential safety benefits, as well as the costs and impacts associated to the trucking industry itself. In BC, the weight reduction would only affect quad-axle truck and trailer combinations and their transport of gravel aggregates, logs, and bulk liquids. These affected categories of vehicle operate almost exclusively in the province, with network coverage of 95% local and 5% inter-provincial. Given the low percentage of inter-provincial operation, the CVSE Director felt it necessary to concentrate on establishing road safety research and statistical analysis on the following aspects prior to making his decision:

- An assessment of the potential safety benefits of a reduced trailer weight allowance, and analysis on the frequency and severity of commercial vehicles with subject configurations involved in roll overs or other types of incidents on BC public roads;
- An evaluation of the consequent economic costs and environmental impacts associated with the reduction, and determining whether the weight reduction produces a direct and measurable safety benefit while ensuring that there is no negative economic, environmental, or traffic volume impacts;
- Comparing vehicle dynamics exhibited in 1992 with vehicle dynamics exhibited in 2013, as well as vehicle dynamics permitted in other jurisdictions;
- Conducting consultation with the trucking industry regarding the potential effects on the sector.

In 2012, the ministry retained the services of EBA Engineering Consultants Ltd. operating as EBA, a Tetra Tech Company to undertake and complete a weight reduction study to determine if there would be a direct and measurable safety benefit resulting from the reduction of the maximum allowable weight of quad-axle truck and trailer combinations in BC.

The study covers two distinct phases:

- A. Data collection and analysis, and
- B. Industry consultation.

Phase A of the study incorporates data collected by the Commercial Vehicle Safety Enforcement (CVSE), the Insurance Corporation of British Columbia (ICBC), and the Ministry of Transportation and Infrastructure (MOTI); and assesses the growth of claims and actively insured vehicles, trends in collisions involving various types of commercial vehicles, and the estimated cost associated with the reduction of the maximum allowable weight. Phase B of the study obtains trucking industry consultation information on the typical use of these trailers, and feedback on the potential implications of the weight reduction on their business.

Reviewed by the ministry, the final report of the study titled Assessment of Potential Safety Benefits of a Weight Allowance Reduction for Quad Axle Trailers in British Columbia, completed in January 2014, is a key component considered in the CVSE Director's decision of maximum weight allowance in the province.

HISTORY

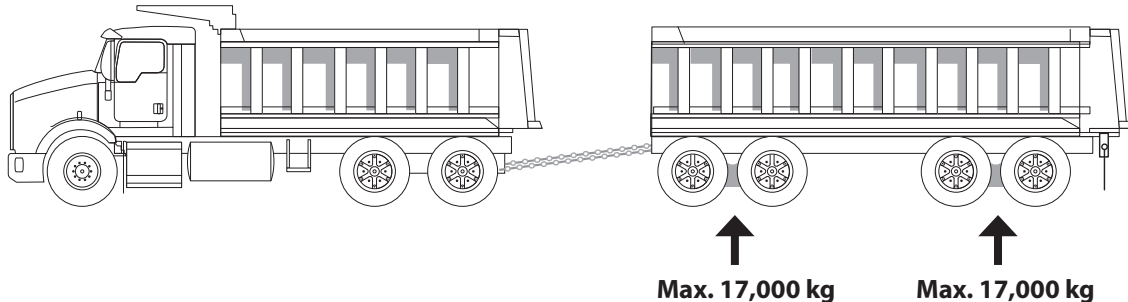
In February 1988, the initial Federal/Provincial/Territorial (FPT) Task Force on Vehicle Weights and Dimensions was established through the Transportation Association of Canada (TAC). The Task Force is responsible for identifying, analyzing, and developing recommendations for uniformity related to heavy vehicle weights and dimensions regulatory policies among jurisdictions in Canada.

In 1991, the TAC Task Force developed a Memorandum of Understanding (MOU) to define a national standard for trucks used in inter-provincial operations; stating under the MOU that the maximum weight allowance for quad-axle trailers should be reduced from 34,000 kg to 31,000 kg across Canada. The reduction was due to vehicle engineering dynamic studies of the day showing that these types

of vehicles are at greater risk to roll over if the load exceeds 31,000 kg, and if the load unexpectedly shifts due to excessive cornering or lateral movement. The MOU also states that any weights permitted above 31,000 kg for reducible loads would be the responsibility of each province to allow through other means of authorization. This change in regulation was to initially take effect in BC on January 1, 2005.

In April 2006, the maximum weight allowance issue was examined further and determined that due to a downturn in the provincial economy, the regulated change would now come into force on January 1, 2011. Although BC has complied with most of the MOU recommendations, the issue of maximum weight allowance for quad-axle trailers has not yet been addressed.

Generic Combination with Quad-Axle Trailer Weight Limited (Existing)



DISCUSSION

In 2010, CVSE was presented with compelling arguments by the BC Trucking Association (BCTA) that the weight reduction on quad-axle trailers from 34,000 kg to 31,000 kg would have an adverse effect on provincial Green House Gas (GHG) reduction targets, and create potential safety and cost disadvantages due to an increase in trucks required to carry the same amount of product.

The BCTA also brought into question whether the forecast safety benefits from weight reduction could be realized by a majority of the trucks hauling denser loads.

The ministry agreed to postpone the regulated weight reduction change until it was satisfied that the weight reduction was appropriate from a safety point of view. In August 2011, the ministry issued a request for proposals for an independent consultant to research and analyze the current safety performance of this type of truck and trailer combination and make recommendations based on their findings. In November 2011, the ministry issued a circular to notify the trucking industry that the deadline for trailer weight reduction had been extended to December 31, 2012.

SAFETY

The report examines Insurance Corporation of BC (ICBC) and ministry data (2002-2011) regarding registrations, claims, and crashes of this type of vehicle. From the data available, the study concludes that there is not a trend of increased claims for quad-axle trailers; stating that given the small number of reported crashes, the safety benefits of a weight reduction would be marginal.

ICBC data determined that while the annual growth rate for logging, dump and tanker trucks was 11%, and logging, dump and tanker trailers had a growth rate of 5%, there was a decrease in the claims rate for both trucks and trailers (per registered vehicle) in the province. In addition, 82% (trucks) and 90% (trailer) claims were for property damage without casualties.

To get an accurate understanding of the rate and cause of serious crashes, compared to the rest of the trucking industry fleet, it is difficult to isolate this specific type of vehicle when examining the ICBC registration and crash data. ICBC does not identify quad-axle or full trailer as a trailer type in their current data. ICBC does however provide data on commodity based trucks, (tank, dump, and logging). It is difficult to determine through ICBC data if these trucks are travelling on their own or with a trailer and the type of trailer. All of these trucks would be equipped with a pintle style hitch when towing a trailer. Over the 10-year study period, these trucks have stayed relatively constant at 0.198 claims per registered truck.

In addition, commodity based trailers (tank, dump and logging) were examined. Unfortunately, the ICBC data

does not differentiate between pintle hitch connections and all other types of hitches and trailers. The claims rate for these trailers has also stayed relatively constant at 0.0228 claims per registered trailers, approximately 1/10th claim rate for trucks.

When compared to the rate for all types of trucks and trailers, the claims rate for commodity based trucks is 20% less than the rate for all trucks. The claims rate for commodity based trailers is about 90% higher than for all registered trailers.

Ministry crash data from 2002 to 2011 for provincial highways was also examined. This data includes a category for "Highway Truck and Trailer", which is almost exclusively pintle hitch type trucks and trailers. Data for the 10-year period shows the number of reported crashes has reduced 48% and the number of casualty crashes has reduced by 57%.

While there is no data on the number of highway truck and trailer combinations on provincial highways, we can assume from the growth in registered trucks with pintle hitches that the falling number of collisions also represents a falling crash rate.

While none of the data sets differentiate quad-axle trailers from any of the other trailer configurations that use pintle hitches, the preponderance of evidence we have shows that these truck and trailer combinations are performing safely.

VEHICLE DYNAMICS

There are two types of trucks and trailer combinations that include quad-axle trailers; tandem drive trucks with quad-axle trailers which formed the basis of the weight reduction proposal in the early 90's, and tridem drive trucks with quad-axle trailers which were introduced in to mid-2000's.

Three factors are considered when assessing truck stability; Static-Rollover Threshold (SRT), Load Transfer Ratio (LTR) and Rearward Amplification (RA). The purpose of the weight reduction proposed in the early 90's was to lower the center of gravity of the trailer and thus improve its stability.

Since the weight reduction was introduced, a number of other changes in configurations have been made to improve stability, including widening the axles and permitting wider bunks on logging trucks.

Using the pre-90s' tandem truck quad-axle trailer with 34,000 kg as a base, the weight reduction would not achieve the stability levels recommended by TAC for tandem drive quad-axle configurations. In fact, by widening the axles, this vehicle configuration is within 6% of the levels of a pre-90s configuration at the reduced weight. Even combining the weight reduction with axle widening allows the trucks to meet TAC levels for Load Transfer Ratio, but not the other two factors of Static-Rollover Threshold and Rearward Amplification.

Analysis of tridem drive quad-axle trailers shows a different picture. Neither the weight reduction nor any of the other measures such as wider bunks will bring the trucks in alignment with TAC recommendations.

OTHER JURISDICTIONS

Other jurisdictions in Canada allow commercial vehicles with very similar configurations to operate in excess of the 31,000 kg on quad-axle trailers while hauling reducible loads under a permit or authorization. These jurisdictions include Ontario, Quebec, and the Yukon.

Over the last decade, Ontario has been developing their SPIF (Safe, Productive and Infrastructure Friendly) regulations for truck weights and dimensions. The fourth and final phase, which speaks to highway truck trailer combinations, was adopted and put into force in July 2011.

The dynamic analysis for this part of SPIF is based on the fact that many of the truck and trailer configurations do not meet the TAC recommendations, yet they are performing safely. Ontario has developed

Assessment

Dynamic analysis shows the weight reduction, even combined with other truck stability improvements, would not improve dynamics to a level that would meet TAC recommended levels for Static-Rollover Threshold, Load Transfer Ratio and Rearward Amplification. Based on this analysis, it is not evident that the weight reduction would have a substantial impact on truck safety and, in fact, other improvements have demonstrated a nearly equivalent improvement in dynamic stability. Since tridem drive trucks were introduced in the mid-2000's, we have not seen a dramatic increase in truck crashes or claims.

Imposing the weight reduction would automatically increase the number of trucks on the road by 7.3%. Expecting that the claim rate would stay relatively the same as it has for the last 10 years, we could expect 7.3% more claims and 7.3% more crashes.

Economically, this would translate into an 7.3% increase in costs to move the same weight of product.

a blended measure called the Dynamic Performance Indicator which allows them to assess the benefits of different weights and dimensions recognizing many will not meet the TAC recommendations. It is important to recognize that Ontario used both computer simulation and physical testing completed by the National Research Council of Canada to compare configurations.

Under SPIF, Ontario permits tridem trucks with quad-axle trailers to carry a maximum of 36,000 kg, which is 2,000 kg more than BC allows. This increase in weight is based on a lengthened wheel base. They have, however, grandfathered existing trucks until 2025.

Quebec is now exploring SPIF for use in their province

SUMMARY

Based on BC's claims and crash data, quad-axle trailers at full weight are not showing a poor safety performance. In fact, the class of vehicle that includes this type of trailer is showing a reduction in crashes both in terms of serious crashes and all other types of crashes on provincial highways. Moving forward with a weight reduction would increase the number of trucks on the road while still not having those trucks fully meet TAC recommended dynamic criteria.

Other provinces recognize the need to develop a different set of trucking weight and dimension criteria and have either adopted or are considering a set of criteria that they consider Safe, Productive and Infrastructure Friendly.

Based on this evidence, it makes sense for BC to revoke the weight reduction and allow quad-axle trailers to operate up to 34,000 kgs.

DIRECTOR'S DECISION

The Director of CVSE has the authority within the *Commercial Transport Act* to provide exemptions and permits for vehicles that are unable to conform to regulations and conditions. It is the responsibility of the CVSE Director to ensure that issues are thoroughly examined, research is conducted, and sound decisions are made.

The Director of CVSE has made the decision not to proceed with the weight reduction.