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Bodies that don't fit

There is a problem with regulation of bodies that are fitted to trucks and trailers. They can fall through a large regulation hole. The national standards for road-safety aspects of new vehicles are the Australian Design Rules (ADRs). The ADRs do not specify design or performance standards for bodies that could be fitted to heavy trailers. So, what technical standards apply to truck and trailer bodies? Well, mostly none.

The problem is this: The ADRs are focused on minimising the risks of road trauma and environmental degradation. The bodies on trucks are items of plant equipment. Plant equipment is regulated by the various state and federal work safety regulations. None of the plant regulations specifically concern bodies that go onto trucks and trailers. That is, there is a fundamental disconnect between the road-safety regulators and the work health and safety regulators. They have no serious dialogue and have not worked out how to regulate completed trucks and trailers.

I recently investigated the failure of a tipping trailer. The body fell off when the operator was discharging a heavy load of spoil. This incident occurred on a worksite and the state work health & safety regulator was informed and attended. It put a notice on the trailer owner, who also owned other identical type tipping trailers from the same manufacturer. The cause of the failure was immediately apparent to all investigators. The pivot design was totally inadequate. This can be seen in Photo 1.

Photo 1 shows one of the pivot shafts at the front of the tipping body. The body is missing because it was lying on the ground. Notice that the pivot for the shaft is welded onto 6mm mild steel and there is no reinforcement. The design is not strong enough for the loads it could experience. Photo 2 shows the sister trailer during modification. Two extra pivots were added, reinforcements were installed into each welded corner of the rear plate, and a cross member was installed between the added pivot side plates.

This tipping trailer has a compliance plate that certifies compliance with the ADRs. These rules have no requirements for tipping trailer strength. The trailer manufacturer could obtain an approval that enabled registration of its trailers without any formal design review by anyone. The ADRs only require that the body has acceptable dimensions and lights. Put simply, the design is unsafe, and the lack of regulations allowed for it.

What happened next surprised me. Based upon VIN number sequence, there are many tens of the subject trailer model on Australian roads. However, the manufacturer is no longer in business. A representative of the work health-and-safety regulator told me it was powerless to deal with the safety problem because it had no relationship with, and no power over the other trailer owners. I then contacted the Federal ADR regulator. After investigation, the regulator told me, because the trailer manufacturer was no longer in business, there was nothing they could do about it. No safety recall could be mandated because there was no manufacturer to conduct it. But what about the safety of the public?

The bodies that are fitted to trucks and trailers either carry loads or do useful work, such as lifting, spreading, or watering across the country. Bodies are regulated by work health & safety regulations. These require the designer and manufacturer of plant equipment to conduct a hazard and risk assessment. The hazards are to be identified, the risks are to be quantified and then controlled. Only low or very low risks are acceptable. When the assessments are done, four questions need to be answered and ranked:

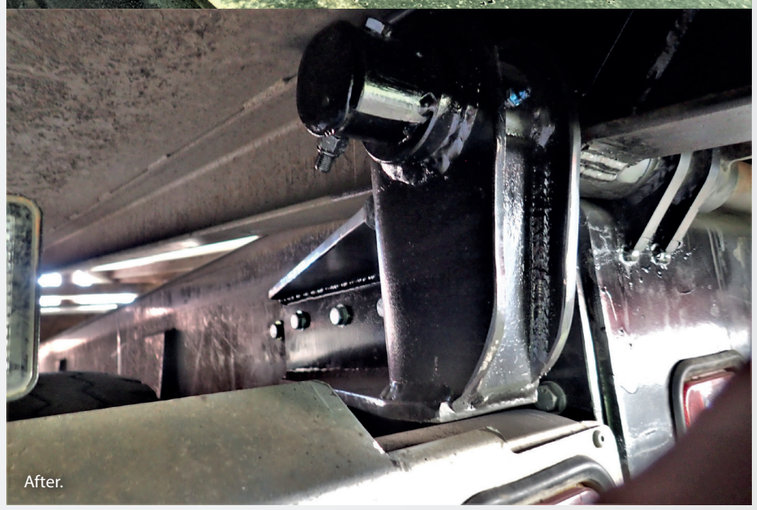
1. What could go wrong?
2. How serious is the hazard?
3. Is the exposure to the hazard continuous, intermittent or once-in-a-blue-moon?
4. What is stopping the hazard occurring and what level of safety exists with the protections?

A proper hazard and risk assessment is documented in the technical file, and it should be reviewed by an independent engineer. In the case of the tipping trailer design described in this article, the answers to the questions are:

1. The body might fall off.
2. The consequences could be fatal.
3. The exposure is continuous.
4. The countermeasure is the strength of the pivot design, which is inadequate.

The risk level for body separation is 'high' or even 'extreme'. This trailer should not be used. Despite the assessment, this tipping trailer model is being widely used today in Australia.

Before.



After.

The solution to the regulatory problem is to require manufacturers to lodge a written hazard and risk assessment with the federal regulator when the vehicle approval application is lodged. Then, someone in authority should assess it. This then raises the issue that the federal regulator is not responsible for plant equipment safety, Hence the gaping hole in the regulation structure.

If the body had been fitted in the aftermarket, the NHVR would require an accredited engineer, called an Approved Vehicle Examiner to approve the fitment of the body. The assessment involves meeting the requirements stated in the national HV modification code called Vehicle Standards Bulletin No. 6 (VSB 6). While VSB 6 does not specify minimum factors of safety for designs, it does provide the basis for assessment by an independent engineer. This is not required of manufacturers of new trucks and trailers when they install bodies under cover of a federal vehicle approval.

Some types of bodies are prescribed equipment. That is, an approval is needed from a work health and safety regulator. Fuel tankers are prescribed equipment. Mobile cranes that lift more than 10t-m are prescribed equipment. I recently learned that a vehicle loading crane that can lift more than 10t-m is also prescribed equipment. It must comply with the AS 1418 series of standards despite no modifier I know ever getting an approval. There is also no national regulation for tow trucks, despite the existence of AS 5400:2015. I regularly inspect tow trucks that have broken chassis. This is because the factors of safety that are specified in AS 5400 are often not met.

I advocate that Australia adopts an AE mark. This would operate similarly to the European Union's CE mark. The CE process has a well-developed regulatory structure based upon the 'EU Machinery Directive'. Suppliers of machinery into the European Union must make a declaration of compliance with the CE process. The technical standards that apply to the CE mark could be adopted, with modification in Australia. If an AE mark was required for all plant equipment that was supplied in Australia, there would be a path to better equipment standards on new vehicles. I live in hope!

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