



Technical Requirements for Dangerous Goods Vehicles

livestock-crate trailers and concrete agitators. To understand why change has been tortuously slow, we need to understand who makes the rules.

The Australian Design Rules are developed and administered by the Vehicle Standards Section (VSS) of the Federal Department of Infrastructure and Transport. State / Territory Governments co-operate with, and accept the ADRs as an acceptable technical standard for new general-purpose road vehicles. The State / Territory work-safety authorities regulate some types of special purpose vehicles such as cranes, road sweepers, concrete pumps and dangerous goods tankers. The work-safety authorities attempt to have consistent requirements and processes via a consultative group called the Competent Authorities Panel (CAP). The CAP attempts to reach decisions by consensus. The CAP has considered a proposal that dangerous goods tankers should have roll-over protection on multiple occasions and rejected it. The reason for this is that some jurisdictions that have lots of long, straight, flat, country roads are not convinced and voted no. Fortunately, Minister Gay has lost patience with the CAP and NSW is providing long-needed leadership. The consequence of that leadership will effectively be that the DG haulers in all the eastern seaboard states will require roll-over protection on most tanker-trailers.

It is difficult to understand why dangerous goods tanker-trailers generally do not need to have advanced braking and control systems. Antilock brakes were originally mandated on B-double trailers in the mid-1990s. Some outback carriers complained and the National Transport Commission (NTC) capitulated. ABS was then only required on B-double DG tankers. Because of this the fuel-haul industry developed a lot of experience with advanced braking and stability control systems on B-double

tankers. It is incredible that we are still debating whether this gear should be mandated on single-trailer tankers! Back to technical standards. The NSW EPA has released a determination that requires road tank trailers constructed after 1 July 2014 to have a roll-over control function. The relevant tankers are intended to carry certain dangerous goods in bulk. Here are some important points:

- A roll-over control system is an electronic system that responds to an impending roll-over situation to stabilise the trailer during dynamic manoeuvres within the physical limits of the trailer, by applying selected brakes.
- Systems that change roll-stability by quickly pumping up suspension airbags on one side of the trailer are not acceptable.
- An appropriate technical standard for the roll-over control is UN ECE Regulation 13.
- All types of heavy tanker trailers (ATM > 4.5t) are covered.
- The requirement is applicable to dangerous goods that are listed in the determination. These include: LPG, petroleum fuel including diesel, and bitumen (road-making liquids or solids that are classified as flammable coal-tar distillates).
- The requirements do not apply to class 1 (explosives) and class 7 (radioactive) dangerous goods.
- Cement powder, flour and sewerage effluent are not included.
- The requirements do not apply to trailers that carry packaged dangerous goods (i.e. not in attached tanks).
- The implication is that the roll-control function must be working when the tank trailer carries a prescribed dangerous good, but not when it is empty.

The Determination is on the NSW EPA website. The website also announces that the EPA has mandated roll-stability control

on all road tank trailers used in NSW. There is a 5 year phase-in by 1 July 2019. This would apply to in-service tankers. This later Determination has not yet been made and the NSW EPA is considering submissions about this.

By the way, the Federal regulator, VSS has initiated a review of the brake rules for all heavy vehicles that should be concluded this year. This is likely to result in ESC being mandated on new heavy motor vehicles in a couple of years. A crucial issue will be whether ESC with roll-over control will be required on all new heavy trailers. A section of the trailer industry is fighting against advanced braking systems being mandated. Motor trucks hauling tankers are not included in the NSW EPA determination because the roll-over control technology is not readily available on North-American made trucks.

However, the USA has a proposed rule to mandate ESC on new heavy trucks and buses. Europe has already done so. Australia should follow the lead and mandate ESC on new motor trucks intended to haul DG tankers and those fitted with DG tanks. Hopefully this will be an outcome of the VSS review. The technical standard ECE Regulation 13 (Rev 8) is a serious read! It requires new trailers (not only tank-trailers) to have a stability control function (ESC) and a roll-over control function. The ESC function must be able to apply individual brakes (and not just all the trailer brakes) to correct the trailer path. The roll-over control function need only apply all the trailer brakes. What about other technical requirements for DG vehicles? The Australian Dangerous Goods Code (ADG 7) is based on the UN ECE model rules. Coincidentally, these rules are called ADR in Europe, but the meaning is different to that in Australia. Part 9 of the European ADR concerns technical requirements for road-tank vehicles (trucks and trailers). This Part was not adopted into ADG 7. The status-quo in Australia is AS 2809 Road tank vehicles for dangerous goods; Parts 1 – 6. Compliance with AS 2809 was specified in ADG 7. The problem with this is that European truck manufacturers can supply trucks with a European ADR kit



however, this is not recognized in Australia. Note that AS 2809 is only applicable to road tank vehicles and it does not apply to trailers that carry dangerous goods in containers. Many placarded vehicles do not need to comply with AS 2809. For example, conduited wiring is not required. Please check with your local work-safety authority if you are unsure about requirements. AS 2809 interprets a whole swag of safety standards for dangerous and explosive atmospheres. It provides the truck industry with a simplified statement of requirements. Three safety Zones are identified and defined; which are:

ZONE 0 – explosive gas environment is continuously present. Zone 0 is assumed to exist inside the tank.
ZONE 1 – explosive gas environment is likely to occur in normal operation. Zone 1 is assumed to exist within 500 mm of an exterior discharge point.
ZONE 2 – explosive gas environment is not likely to occur in normal operation and if it does occur, it will exist for short-periods only. Zone 2 is assumed to exist at all other exterior locations up to the back of the cabin. Most places on a tanker trailer are Zone 2. AS 2809 needs revision because it is prescriptive about electrical-system requirements and has not kept up with technical progress. AS 2809

does provide guidance about acceptable cable sheaths and insulating materials. Ironically, these requirements are taken from the European ADR! However, AS 2809 does not consider electrical connector requirements. Electrical connectors are apparently not allowed, despite the fact that two connectors (i.e. lighting and ESC) exist at the front of DG tanker trailers. At least the European ADR has a specification for connectors; which is that they meet an IP54 rating. Why is this important? Because many trailer electrical items are now modular. Connectors are required. For example, many LED tail-lamps now come with a fly-lead that is intended to plug into the fixed trailer spine-wiring. Complex electrical controllers, such as roll-over protection systems, tracking systems and metering systems often have external connectors. The designs will increasingly be based upon European ADR requirements. Therefore, Australia needs to urgently revise AS 2809 to either incorporate some of European ADR requirements or specify it as an alternative technical standard for DG tanker vehicles. It is impractical to require wiring loom manufacturers to obtain test-laboratory certificates for loom designs just because they have connectors in them.

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