Technical Requirements for Dangerous Goods Vehicles

The remarkable thing is that it has taken so long to get a roll-over function 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 > 45000) require roll-over control.
- The requirement is applicable to dangerous goods that are listed in the determination. These include: LPG, petrol, diesel, and liquid hydrocarbons.
- To comply with the determination, roll-over control systems must be installed on the trailer.
- The roll-over control function will observe relevant regulations.

Some important points:

- The requirements do not apply to class 1 (explosives) and class 7 (radiactive) dangerous goods.
- The requirement does not apply to tankers carrying dangerous goods (i.e. not in attached tanks).
- The implication is that the roll-control function can be subject to many exceptions, and not always mandatory.

This is that European ADR manufacturers are 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 LSA has a proposed rule to mandate ESC on new heavy trucks and buses. Australia 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 tankers (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 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 that AS 2809 Road tank vehicles for dangerous goods has been superseded by 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 incorporates a whole slew 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 IP4 rating.

**Why is this important?** Because many trailer electrical items are now modulated: Connectors are required. For example, many LED tail-lights 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 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 boom manufacturers to obtain test-laboratory certificates for boom designs just because they have connections in them.

Dr Peter Hart, Chairman