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DAYTIME RUNNING LIGHTS

Nearly ¾ of all fatal crashes involving trucks are head-on.

A review of many overseas studies has found that daytime running lights (DRLs) can reduce the risk of day time head-on crashes by nearly 25%.

However the DRLs need to be bright enough to be noticed by on-coming drivers.

The forest industry has, for a number of years, adopted an industry best practice recommendation to run with headlights on in-forest due to the dust and half light conditions.

Unfortunately this has led to frequent headlight bulb failures, particularly in the rough forest road environment during the heat of summer. This has meant that ensuring the lights were all working properly at night has become more difficult.

Lower wattage bulbs have been used to reduce the problem of frequent bulb failure but they compromise the need for higher wattage bulbs for drivers to drive behind at night.

LED Day Running lights, which are now available, have much better conspicuity than dimmed headlights during daylight hours and by using them, headlights can be reserved for night time use, enabling high wattage bulbs to be used for the headlights and the problem with premature bulb failures addressed.

After a detailed review of the issue, the Log Transport Safety Council recommends that:

- DRLs should be installed on log trucks as the opportunity arises, for example, when new vehicles enter the fleet.
- DRLs should have a light intensity of at least 400cd at the eye level of on-coming vehicles.
- DRLs supplied to the appropriate NZ Standard should be used, not headlights or vehicle recognition lamps.
- Two DRLs, at least 600mm apart, should be installed on the front of each vehicle.
- DRLs should not be used at night instead of or as well as headlights because of the glare to on-coming motorists. A system that automatically swaps from the DRLs to the headlights at dusk is preferred. The use of headlights on low beam is not encouraged because of their low light intensity at the eye level of on-coming motorists.

- Headlights on low beam also waste energy, produce confusing reflections on wet roads and increase the frequency of bulb failure, which leads to more vehicles operating with one headlight at night. The latest European style low beam headlights produce much less light in the direction of oncoming road users than older designs of headlight.

- Ideally DRLs should be wired so that they turn off when the indicators are turned on to make sure the indicator lights are noticed but this is not always practical.

Background information

Reviews of the large number of studies that have been undertaken in Europe on DRLs (Knight 2006, Koornstra1997) found that :

- if all vehicles used DRLs in Europe, 24.6% of fatalities in multiple vehicle daytime accidents could be prevented.
- approaching drivers tend to think on-coming vehicles with DRLs or headlights on are closer than the same vehicles without them on. This increases the minimum gap that motorists allow to overtake, which leads to improved safety.
- the calculated safety benefits were large enough for the authors to recommend mandatory fitment of DRLs on all vehicles in Europe. They are now mandatory or are being considered in many European countries, Canada Greenland, Iceland and parts of the Middle East.

The benefits of having DRLs on trucks are likely to be greater because trucks travel a lot further each year than cars.

An Australian study (Paine 2003) recommended:

- The use of dedicated DRLs, (which are normally LED based)
- That the use of headlights on low beam in daylight should not be encouraged in Australia because of the high levels of ambient lighting.
- Headlights on low beam also waste energy, produce confusing reflections on wet roads and increase the frequency of bulb failure, which leads to more vehicles operating with one headlight at night.
- DRLs should not be used at night; instead of or as well as headlights, because of the glare to on-coming motorists. A light sensitive switch is suggested that swaps automatically from the DRLs to the headlights at dusk.
- The latest European style low beam headlights produce much less light in the direction of oncoming road users than older designs of headlight.

Using dedicated low power consumption LED-based DRLs , which are locally available from as low as 2 Watt per lamp, produces significant savings both in fuel consumption as well as replacement bulbs, compared to 2 X 55 Watt headlamp bulbs.

The savings in fuel alone from using DRLs instead of headlights is likely to, at least, cover the cost of installing the DRLs on log trucks.

There are a range of views regarding how bright the DRLs should be.

- The UK report (Knight et al, 2006) noted that a light intensity of about 200cd would be beneficial without adversely affecting motorcyclist conspicuity.
- Paine (2003) felt that light intensities of 1200cd were appropriate in Australia because of the harsh daylight conditions compared to Northern Europe. Paine (2003), however, did not consider the conspicuity of other road users such as motorcyclists.

Some log truck operators are using lamps (typically strip, round or rectangular in shape) that are sometimes referred to as "Vehicle Recognition Lamps". These lights are subject to the visibility restrictions of paragraph 10.9 of the Rule and are designed to provide a defuse light that is towards the side of a vehicle and angled towards the ground. They typically produce only 80-100cd of light.

Low beam car headlights have a light intensity at the eye level of on-coming motorists of approximate 100cd.

Headlights on full beam have a light intensity of 60,000 to 100,000cd.

Whether the DRLs are white or yellow makes little difference if they are bright enough.

The ECE R48 positioning requirement of 600mm minimum between “apparent surfaces” should be considered as part of the proposed Rule change.

References:

Knight I., B Sexton, R Bartlett, T Barlow, S Latham, I McCrae (2006) Daytime Running Lights (DRL): A review of the reports from the European Commission, TRL Published Project Report PPR 170, UK

Koornstra M, F Bijleveld, M Hagenzieker (1997) The Safety Effects of Daytime Running Lights, SWOV Institute for road Safety Research, The Netherlands

Paine M., (2003) A review of Daytime Running Lights, RAVC and NRMA, Australia