

APPENDIX—*Special Presentation*

Innovative and Productive Vehicle Combinations in Australia: A Performance-Based Approach

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A slide presentation allowed participants to see how Australia has uniquely applied performance measures to accommodate its special motor carrier needs. Trucking in Australia involves long distances driven over varying road conditions, so many vehicle combinations have been considered.

Australia has three vehicle classes:

1. As of right (or general access) vehicles, which are mainly six-axle tractor-semitrailers and some truck-trailers that can be up to 42.5 tons gross combination mass (GCM) and 19 m (62 ft) long;
2. Medium combination (or route permit) vehicles (MCVs), which are mainly B-doubles and some heavy truck-trailers that can be up to 59 tons GCM and 23 m (75 ft) long; they generally perform as well as or better than general access vehicles; and
3. Road trains, which operate in certain areas, are usually doubles or triples and are beginning to employ innovative combinations of B-trailers. Type 1 road trains are limited to 79 tons and 36 m (118 ft); Type 2 trains are limited to 116 tons and 52 m (171 ft). Although road trains have been used for a long time, their performance is inferior to general access vehicles or MCVs.

To judge vehicle performance, Australian authorities may consider rollover stability, rearward amplification, low-speed offtracking, high-speed offtracking, and swept width (the amount of sway that a long combination has as it travels a roadway). Virtually all possible vehicle configurations are being considered in performance and evaluations.

Initial performance evaluations found the best configurations to be B-doubles, B-triples, B-quads, AB-triples, and BAB-quads; the worst configuration for performance was the A-triple. These tests also determined that triaxles improve performance. From a productivity point of view, length limits constrain use, but shorter semitrailers (12.5 m, or 41 ft) improve flexibility and productivity in fleets covering all vehicle classes. B-doubles, B-triples, AB-triples, and BAB-quads offer high utilization and productivity across all vehicle classes.

Concluding his remarks, Peter Sweatman said that performance standards should be relative to vehicle configuration and, if established in place of conventional size and weight regulations, allow productivity gains (such as more weight on larger vehicles or more cube through more access). Furthermore, standards should be established with an eye on safety improvement (i.e.,

providing better stability and tracking) and on the potential for reducing the number of trucks required for the transportation task.

QUESTIONS AND ANSWERS

- *Would Australia allow Canadian C-dollies to be used on its vehicles?*

Sweatman said that no decision had been made. There are Canadian standards but no significant industry demand for C-dollies, and practical difficulties exist for Australian fleets.

- *What are the benefits of a sign, seen in one of the slides, that cautioned drivers that B-doubles are "long vehicles?"*

Sweatman replied that he didn't think those signs, part of government requirements, made any difference.

- *Are triaxles steerable?*

Sweatman said that they are not but that the Australian bridge community has supported wider spacing on triaxle vehicles, and that a package is being developed. This may increase the need for steerable axles, but he surmised that such spacings would probably be manageable with a fixed axle.

- *How did the Thomas tanker, seen in some slides, evolve?*

Sweatman explained that Shell Oil and Hockney looked at various tanker-truck concepts being used around the world and tried to design a truck that would surpass all of them, with roll stability being a major design criterion. The Thomas tanker evolved and, although not many are in use, these trucks are doing well in the transportation of hazardous materials.

- *What is the Australian truck use tax structure?*

Sweatman and Pearson said that, in Australian dollars, the rates are \$0.29/L for federal excise tax, up to \$0.06/L for various state taxes, and \$7,000 to \$12,000 for annual charges. He noted that dramatic increases in road train charges have been proposed but face strong regional opposition.