A RECONSIDERATION OF THE VALUE OF TILTING INTERCITY TRAINS

BR's present business strategy is to use tilting Advanced Passenger Trains on Inter-City routes. It is considered timely to review both the assumptions inherent in this strategy: that a tilting train can provide an adequate financial return, and that the present technique of providing tilt is the best solution. The original calculations of the value of tilt were made at a time when speed elasticities were set at values which are now considered unrealistic, and more technical options are now available than were previously. Due to lack of knowledge of important characteristics, the estimates in the report are still imprecise, but they show the nature of the decision that must be made about whether trains should tilt.

This report evaluates the likely direct costs and benefits of increasing train speeds in curves by four different methods over six routes which are considered representative of the Inter-City network.

It is concluded that, although the results are sensitive to small changes in costing assumptions, the present policy is almost certainly not the most commercially attractive.

There appear to be no good grounds on the basis of comfort for tilting the train to compensate fully for cant deficiency as done on the Advanced Passenger Train. Such large angles of rotation are likely to cause substantial extra costs. Hydraulic tilt is unlikely to be commercially profitable at these tilt angles, and may well not be the optimum solution with smaller tilt angle and higher cant deficiency.

Electric tilt would not be profitable on the basis of the assumptions made, but appears to be more attractive than hydraulic tilt and could be profitable at small tilt angles especially if it proves to have high reliability. Very little is known about pneumatic tilt, but for small tilt angles it appears to be both commercially profitable and one of the best technical solutions.

No reason has been discovered for not curving faster, with UK testing and experience on the continent suggesting that little discomfort would be experienced up to about 6º of cant deficiency. Even if modification costs are significant, use of this option with non-tilting vehicles is likely to offer the best return.

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