

## RELATIONSHIP BETWEEN RIDE AND BOGIE CONDITION

This report describes an investigation into the feasibility of detecting early signs of suspension deterioration using traditional ride assessment methods. The objective is to identify characteristics of a vehicle's riding behaviour which indicate a need for maintenance. Ideally, by measuring riding behaviour using simple low cost methods, the ultimate goal is to identify culprit components or assemblies.

It is concluded that:

- Vehicle body acceleration measurements have shown that there is no variation of ride with accumulated vehicle mileage within current maintenance procedures and intervals. Consequently the analysis does not reveal the onset of significant ride deterioration resulting from component deterioration.
- An analysis of ride performance before and after C4 maintenance for one bogie revealed little about the effect of maintenance on ride, but demonstrated the significance of speed, passenger loading and wheel/rail conditions.
- Theoretical predictive methods currently have little application for assessing bogie condition because of a lack of knowledge regarding component degradation. To acquire such knowledge would require long term extensive testing which is not considered practical.
- Theoretical ride analysis emphasised the design conflict between operating on straight track, curved track at cant deficiency and at discrete irregularities. The current ride specifications do not fully address the conflict between these track inputs and are therefore inadequate as the criteria on which to base a condition monitoring system.
- A general condition monitoring system will be unable to indicate maintenance which is carried out for preventative reasons to avoid damage to costly complete assemblies. For this type of maintenance the monitoring system must be more specific to individual components/assemblies.
- Approximately £500 (2% of bogie capital cost) would be available per bogie per annum for a monitoring system.