AN ASSESSMENT OF THE PARAMETERS AFFECTING THE SHUNTING IMPACT LOADS OF RAILWAY VEHICLES

It has become clear that there are very few written structural design specifications for railway vehicles and equipment. Where specifications do exist, they are being superseded by operational requirements and by new design and manufacturing techniques. One area where the design criteria appear to be in need of clear definition and revision is that of collision loads. This report describes work relating to normal shunting impacts, not to protection in the event of an accident.

The following points emerged:

- The number of vehicles in a rake does not affect the peak impact force.
- The peak impact force is governed by the characteristics of the colliding vehicles and by the closing speed.
- When a heavy vehicle collides with a rake of lighter vehicles, the force between the first and second vehicles in the rake is higher than the impact force.
- In collisions involving a rake of vehicles with a heavy vehicle (eg a locomotive) at its head, the peak force between the first (heavy) and second vehicle is less than those at subsequent interfaces.
- The simple 'rubber sandwich' type coupler buffer generates much higher buffing loads than other types of buffing element.
- Bogie accelerations reach the normal design level of 3g at only half the closing speed necessary to generate 2000kN buffing loads.

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