

CAUSES OF BR MKII WHEELSLIDE PROTECTION (WSP) EQUIPMENT FAILURE ON MKIII TRAILER VEHICLES

During the course of an investigation into the cause of wheel damage on MkIII trailer car vehicles, it was established that wheel damage was unlikely to occur with a correctly functioning WSP system. It was found, however, that on any one day approximately 10% of High Speed Train trailer car axles were unprotected as the WSP equipment was faulty. The coincidence of WSP failure and low adhesion in braking was thought to be the primary cause of wheel damage. It was decided to conduct an investigation of WSP reliability on the MkIII sleeping car fleet based at Bounds Green depot, as this fleet does not receive maintenance elsewhere and returns to the depot every two days.

If this fleet is typical, then there is a high incidence (approximately 50%) of faulty BR MkII WSP equipment in service on the MkIII fleet as a whole. These faults may result in 25% of axles being unprotected. Only one third of WSP equipment faults found lay in the electronics. The rate of generation of new faults represents an approximate mean time between failure of three years. After the backlog of faults was cleared at Bounds Green it was apparent that nine out of ten subsequent trips of the WSP equipment were probably spurious.

An emphasis placed at depot level on the vehicle wiring and probes, rather than the electronics, may reduce WSP faults by up to two thirds. Half of these vehicle faults could be avoided by improved standards of construction in the area of the wheel probe and its wiring. Modifications proposed to the electronics of the WSP will further reduce the incidence of failure. It is likely that the spurious trips do not indicate a risk of wheel damage but they do undermine the confidence of the depot staff in their ability to repair indicated WSP faults. Measures to eliminate spurious trips would thus appear to merit the highest priority.