

USE OF AXLE MOUNTED TACHOMETER AND END OF SECTION MARKERS FOR DISTANCE MEASUREMENT

For a considerable time, the Train Control Group has used tachometers for the measurement of train position and speed. The tachometer proposed for the British Rail Automatic Train Operation (BRATO) autodrivers will be described in a separate report; for the purposes of this report, the tachometer provides a convenient way of measuring distance to a fine resolution.

Distance measurements are only useful if referred to an origin or local reference, and previously, transponders and other devices were used. For the BRATO pilot scheme the distance reference will be provided by end of section beacons (EOS), which should be capable of providing a fine resolution reference to the distance measurement system.

This report is based on the result of tests carried out using the test train GEMINI to verify the assumptions regarding the performance of the tachometer and EOS system.

The report concludes that the toothed wheel tachometer and end of section beacons together are capable of providing the basis of a measurement system. Although the worst case errors suggest that the range of measurement may be excessive for some applications, it must be considered that many of the errors are systematic and may be minimised by system design and engineering. If precision stopping is required, then it is likely that a special EOS near to the stopping points, having a stronger and better calibrated field, will be needed. Meaningful calibration of the tachometer for service conditions is difficult to achieve given the magnitude of the worst-case range.