

THE HIGH SPEED TRACK RECORDING COACH

The deterioration of traditional track systems, as well as being a function of traffic volume and loading, is affected by other factors including the nature of the local terrain and the weather. The extent to which maintenance action is needed must therefore be established by periodic measurement of the geometry of the track and assessment of its quality. A recording vehicle is required for this purpose, and to enable measurements to be made at sufficiently frequent intervals, the vehicle should be capable of travelling at service speeds.

The problem of measurement of track geometry from a moving vehicle has interested the engineers of the major railway administrations and equipment manufacturers for a number of years. Many ingenious devices have been developed and used for this purpose, of which the 'chord-offset' technique and its variants have been the most popular.

In the 1960s a new profile measuring technique was evolved by General Motors and then developed by Canadian National Railway. This was the technique of inertial sensing, using electronic double integration of acceleration data to give displacement profiles. This idea was adopted when specifying the design of the new High Speed Track Recording (HSTR) coach in 1970/71. Development in the micro-electronics industry has resulted in relatively inexpensive and reliable precision instruments and small, low cost, high performance computers becoming available. Full advantage has been taken of these developments in the design of HSTR.

The vehicle itself has been built using an existing Mk2f coach design. It is of all-steel integral construction, air conditioned with self-contained power generation equipment and is compatible with both air braked and vacuum braked rolling stock, with a through control cable enabling it to be operated as part of a High Speed Train.

The data channels produced by the transducers are:

- Vertical profile
- Gauge
- Horizontal profile
- Horizontal curvature
- Crosslevel
- Twist