

## THE INFLUENCE OF RAIL SIDEWEAR ON DERAILMENT

A combined experimental and theoretical study has been carried out to investigate the acceptable limits of rail sidewear with regard to derailment. Full scale derailment tests were conducted to validate a theoretical derailment prediction method, which was then used to study the effect of a wide range of wheel and rail profiles on derailment proneness.

The key factor is shown to be the maximum contact angle (between the horizontal and the tangent to the point of wheel/rail contact) that can be generated by any given wheel/rail pair. It is further shown that the maximum contact angle is very similar over a variety of sideworn rails from different locations on BR, being a result of wheel flange shapes which are all similar.

It is thus possible to allow greater sidewear than at present because the maximum contact angle remains the same. Suggestions for new limits are made, bearing in mind other factors such as rail strength and gauge widening effects.