

STRESS FREE TEMPERATURE IN CONTINUOUSLY WELDED RAIL – LOSS OF REGULARITY IN SERVICE

Following three derailments of liner trains on modern continuously welded rail (CWR) for which no clear cut reason could be found, the inspecting officer questioned whether the action of braking could affect the stress free temperature in rails without any visible indication. It was not necessarily suggested that this feature had actually caused or contributed to the derailments, or indeed that thermal buckling was involved in all cases. However, one of the sites in particular (Scout Green, Westmorland), was on a long steep downhill gradient approaching a slight speed restriction and after the mishap, the stress free temperature was found to be 20-25°F lower than anticipated, the track being otherwise in good condition. The track was found distorted at the point of the initial derailment, after the train had passed, although in this case in particular there were strong grounds against it being a straightforward thermal buckle. A site was therefore selected where trains braked and where new CWR was to be laid, and at which changes in stress free temperature and its regularity could be assessed.

This report gives the history of a length of CWR over a period of 4 years at a site where braking occurs.