

COST/BENEFIT ANALYSIS OF THREE STRATEGIES TO REDUCE SIDEWEAR ON RAIL CURVES

This report assesses the cost/benefits of three strategies to reduce sidewear on the high rail of curves. The strategies considered are the use of wear resistant steel, use of rail lubrication and the use of asymmetric rail profiles. The asymmetric rail profiles are still being developed. These strategies are compared to the use of untreated normal grade rail steel. The financial assessment comprises a 20 year nett present value (NPV) calculation assuming an annual discount factor of 8%.

The analysis considers a 350 yard section of curved track and assumes that rerailing only occurs due to sidewear. The analysis does not produce precise financial predictions, but should give an indication of the effectiveness of the various strategies in reducing rerailing costs.

The results indicate that the use of wear resistant steels or asymmetric grinding is more economical than the use of normal grade steel. The magnitude of the benefit approaches a constant value for normal rerailing periods of 10 years and above when comparing the use of normal grade and Grade A steel. When comparing the use of normal grade and mill heat treated (MHT) steel the magnitude of the benefit approaches a constant value for normal rerailing periods of 4 years and greater. Lubrication is more economical than normal grade steel where rerailing occurs more frequently than about every three years. The use of asymmetric grinding shows a clear benefit over the use of normal grade steel. The benefits can be similar to those obtained by the use of MHT but until service experience has been gained there will be greater uncertainty about the use of asymmetric rail profiles. Use of the three strategies in combination is also considered, as experience abroad has shown the benefits are cumulative. This is found to be true for most situations considered in this assessment.