

ASSESSMENT OF THE SCALED LINE TECHNIQUE FOR PANTOGRAPH AND OVERHEAD EQUIPMENT DEVELOPMENT

This report attempts to determine points of difference between real and scale line for the Mk 1 Compound and Mk IIIA sagged simple systems, mainly by examination of the contact force PSD (Power Spectral Density). Real line data available to make this comparison is limited to speeds between 145 and 170 km/h.

Results of pantograph experiments on the scale line at Old Dalby have given an optimistic impression of the limiting speeds for Mk IIIA overhead system, and there is lack of confidence in making accurate quantitative predictions of pantograph and overhead equipment behaviour for real line conditions. A recent investigation of the contact loss pattern for Mk IIIA showed little similarity between real and scale lines at equivalent speeds; it concluded that a simple scaling factor should not be used nor should the total time out of contact be used to compare results of a parameter change. That assessment based on contact loss was not able to account for the discrepancies, nor to indicate reasons for the limitation of the scaled line.