

Westlakes Research Institute

Working in Partnership with the

Institute of Materials, Minerals and Mining

FREE LECTURE

Thursday 29th April 2004 at 7.30 PM

The International Research and Graduate Centre

Westlakes Science & Technology Park, Whitehaven, Cumbria

Rolling Contact into Catastrophe: how the failure of a great engineering organisation was related to microscopic fractures in steel rails

Professor Ian Howard, Department of Mechanical Engineering
University of Sheffield

The crash of the 12.10 GNER express out of Kings Cross at Welham Green near Hatfield on 17 October 2000 was fundamentally due to a broken rail. The investigators actually found more than 200 individual pieces. Its cause was rolling contact fatigue, or gauge corner cracking in the railway jargon appropriate to what happens as steel wheels roll around a curved steel track like that at Welham.

It is both deeply ironic and tragic that progressive fracture at the microstructural scale in the steel rails at Welham developed beyond the point of recovery because of weak structural relationships between the engineering companies involved. One of these, Railtrack, was so tenuously connected with the engineering realities of running a railway that it crippled the UK rail industry for a period of more than 6 months after the crash.

The talk will outline the circumstances of "Hatfield", and review the means by which engineers have developed technology to limit its damage. Intelligent application of this technology can substantially reduce the probability of a "Hatfield" ever occurring again.

To avoid disappointment please reserve a seat: contact Wendy McBain on 01946 514112, or email at wendy.mcbain@westlakes.ac.uk