



ABSTRACT OF PAPER

Title of Paper: USE OF INSTRUMENTED REVENUE VEHICLE TO MANAGE A 40 TONNE AXLE LOAD OPERATION AT FORTESCUE METALS GROUP LTD.

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Abstract (max 350 words):

New technologies are continuously being developed to increase productivity and reduce costs while providing a safe working environment. Operations are looking to increase tonnage without dramatic infrastructure costs and one of the ways of achieving this is by heavier rolling stock axle loads. Fortescue Metal Group Operations (FMG) in the Pilbara region of Australia has become the first heavy haul operation to achieve the milestone of 40 tonne axle loads. Innovative strategies for design, construction and maintenance were required by FMG to enable these very high axle loads, one of them being the collection of rolling stock data using the Institute of Rail Technologies Instrumented Ore Car (IOC) system.

IOCs have several key advantages over existing maintenance inspection methods.

Firstly, IOCs reduce the need for track downtime as the condition of the system is monitored as part of normal rail operations.

Secondly, the measurement of the dynamic response of IOCs provide a direct indication of the loads being imposed on the rail network which are not as clearly defined when reviewing data collected by other methods, such as track recording vehicles or visual inspections.

Finally, IOCs provide real time feedback of track and train issues when combined with wide area communication networks.

The data from the IOC system is used by FMG to monitor track condition for both immediate maintenance activities and long term trending of deterioration. FMG has used the IOC system extensively for track evaluation including commissioning new infrastructure, monitoring turnout condition and identifying track weld issues.

Coupler force data collected by the IOC system is used during commissioning of their train unloader systems. The IOC data has shown that upwards of 40% of the damage related to intrain forces is accumulated during the train indexing through the unloader and the availability of intrain loads has allowed FMG to optimise throughput while minimising component failures.

This paper discusses the latest developments to the IOC system and how they are being used to manage a track network being exposed to the highest axle loads in the industry.