ABSTRACT OF PAPER

Title of Paper *(limited to 15 words in CAPITALS):*
IMPROVING THE EFFICIENCY OF VALE'S EFC LINE THROUGH THE USE OF CONTINUOUSLY MEASURED OPERATIONAL DATA

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Nominated Theme:
Vehicle/Track Systems and Train Dynamics

Abstract *(max 350 words)***:**

The continuous drive for increased efficiencies and productivity within the heavy haul railways necessitates the need for a greater understanding of the system performance, along with the ability to integrate this with existing processes to plan and prioritize maintenance.

This paper discusses some of the latest developments in the visualization and interpretation of data collected from embedded intelligent condition monitoring systems called Instrumented Ore Cars (IOCs) and the use of this data in assessing track defect locations including damaged and broken rails.

The IOC system is a flexible fully automated integrated condition monitoring platform, which can be installed on rollingstock used for normal revenue and it provides continuous feedback on both rail condition and train operation.

IOCs have several key advantages over other maintenance inspection methods. Firstly, IOCs reduce the need for track downtime as the system measures the condition of the system as part of normal 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 and visual inspections.

When coupled with the ability integrate this stream of continuously measured operational data with other existing data sources and visualize it in an interactive framework that permits interrogation, the IOCs provide an increased understanding of network utilization, the prioritization of maintenance and the identification of potential bottlenecks or hotspots within the network.

IOC systems are now used by Vale in Brazil for their iron ore mining operations to identify both track and rolling stock related maintenance requirements.

The paper discusses in detail and provides some example of the following:

- The IOC concept and how information is used within Vale's railway operations;
- Visualizing and interpreting measured IOC data in a manner that assists with the understanding of the infrastructure performance and the planning of maintenance activities at Vale; and
- Linking the measured data from the IOCs at Vale with actual damaged and broken rail information.