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AN INVESTIGATION INTO THE SELECTION OF AN OPTIMISED MAINTENANCE STRATEGY FOR CONVEYOR SYSTEMS WITHIN THE PORT OF RICHARDS BAY

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DECLARATION

University of the Witwatersrand, Johannesburg

School of Mechanical, Industrial and Aeronautical Engineering

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ABSTRACT

This research aimed to use conveyor failure data from the PORB to: 1) Review and identify effects of the existing maintenance approach, 2) Highlight failure causes and consequences and 3) To determine the most suitable maintenance strategy for conveyors in the PORB that will reduce failures thereby reducing downtime and loss of revenue. The scope of research was narrowed to the routes which had experienced the most failures which was supported through use of the Pareto principle. The failure data was put through a logical sequence of failure analysis tools to identify cause-and-effect relationships and survey questionnaires were sent to key personnel which formed the basis for the selection of a maintenance strategy. The research has shown that a modified version of Reliability Centred Maintenance (RCM), with dominant predictive methods, will provide benefit to the business by applying the appropriate combination of maintenance strategies (RM, PM or PdM) and prioritising maintenance tasks based on the equipment and components that pose significant consequential risks.