

**ENHANCING PHYSICAL AVAILABILITY OF PC4000 AT BUMA LATI
MINING OPERATION THROUGH MAINTENANCE OPTIMIZATION,
SPARE PARTS READYNES, AND WORKFORCE DEVELOPMENT**

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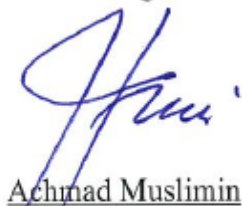


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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.


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ABSTRACT

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This study investigates the persistent issue of low physical availability (PA) of PC4000 hydraulic excavators at the BUMA Lati mining operation, which has adversely impacted production performance and revenue. The research identifies key root causes including inadequate maintenance inspection time and quality, limited mechanic competencies, insufficient spare parts readiness, and recurring technical problems—particularly hydraulic and electrical failures. A structured problem-solving methodology, integrating DMAIC and the 3W framework, was employed to develop and implement targeted improvement strategies. These strategies focused on optimizing preventive maintenance processes, improving critical spare parts availability through inventory collaboration, and enhancing workforce capability via competency-based training programs. Post-implementation evaluation revealed an increase in PA performance, reduced downtime, and improvement in customer relationship level (CRL), demonstrating the critical role of coordinated maintenance, supply chain, and human resource interventions in sustaining heavy equipment availability in mining operations.

Keywords: Physical Availability, Maintenance Optimization, Spare Parts Readiness, Workforce Competency, Customer Relationship Level.



DEDICATION

This thesis is dedicated to the future of the beloved company PT. United Tractors, especially UT Site Tanjungredeb, so that in the future the business can continue to grow and become a shady tree for all stakeholders.



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So far, I have gained useful and meaningful learning experiences through the quality curriculum and programs presented. This provides provisions to continue exploring ideas and problems in the past and the future, which of course will support my work at the United Tractors company.

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