

ABSTRACT

Dump truck LGMG CMT 96 is a heavy-duty vehicle utilized by PT Ansaf Inti Resources for transporting overburden material from the loading point to the disposal point. This dump truck operates for 22 hours daily, posing potential risks of damage to various components if not accompanied by optimal maintenance. In dump truck LGMG CMT 96 with unit code DT 060-032, transmission system damage was identified. Symptoms observed included the appearance of warning indicators and fault codes on the dashboard, jerks during operation, overheating, changes in transmission oil color, and failure in gear shifting. This damage occurred at 2,143.5 hours meter, significantly below the company target lifetime of 20,000 hours meter. This study aims to identify the primary causes of transmission damage in dump truck LGMG CMT 96 using data from monitor checks, visual inspections, historical maintenance records, Engine Inspection Program (PPM), Oil Analysis Program (PAP), and transmission component overhaul results. The Applied Failure Analysis (AFA) method was employed, focusing on wear principles and metal fracture analysis. The analysis revealed damage to the coupling (lock-up clutch) characterized by brittle fracture on the spring holder plate and excessive wear on the clutch plate, including deformation, heat spots, and blue temper, leading to abrasive wear. Based on performance test data using ET Tools, unit haulage samples, and the type of fracture on the coupling (lock-up clutch), it was concluded that operational errors were the primary cause of transmission damage, resulting in clutch slip and fault code F:191 S:8.

Keywords: Dump truck, transmission, maintenance, clutch slip

INTISARI

Dump truck LGMG CMT 96 merupakan alat berat yang digunakan oleh PT Ansaf Inti Resources untuk mengangkut material *overburden* dari titik muat menuju titik pembuangan. Operasional unit *dump truck* ini mencapai 22 jam kerja sehari, yang berpotensi menimbulkan kerusakan pada berbagai komponen jika tidak disertai perawatan optimal. Pada unit *dump truck* LGMG CMT 96 kode DT 060-032, ditemukan kerusakan pada sistem transmisi. Gejala yang teridentifikasi meliputi munculnya *warning indicator* dan *fault code* pada *dashboard*, hentakan saat operasi, *overheating*, perubahan warna oli transmisi, hingga kegagalan transmisi dalam pergantian kecepatan. Kerusakan ini terjadi pada *hours meter* 2.143,5 jauh di bawah target *life time* perusahaan yaitu 20.000 *hours meter*. Penelitian ini bertujuan untuk mengidentifikasi penyebab utama kerusakan transmisi *dump truck* LGMG CMT 96 dengan menggunakan data dari *monitor check*, *visual check*, data *historical maintenance*, Program Pemeriksaan Mesin (PPM), Program Analisa Pelumas (PAP), dan hasil *overhaul* komponen transmisi. Metode *Applied Failure Analysis* (AFA) diterapkan dengan pendekatan prinsip keausan dan patahan logam. Hasil analisis menunjukkan kerusakan pada *coupling* (*lock up clutch*) dengan patah getas (*brittle fracture*) pada *spring holder plate* dan keausan berlebih pada *plate clutch* yang mengalami deformasi, *heat spot*, dan *blue temper* yang menyebabkan *abrasive wear*. Berdasarkan data *performance test* dengan ET Tools, sampel ritase unit, dan jenis patahan pada *coupling* (*lock up clutch*) disimpulkan bahwa kesalahan pengoperasian merupakan penyebab utama kerusakan transmisi sehingga menimbulkan *clutch slip* dan *fault code* F:191 S:8.

Kata kunci: *Dump truck*, transmisi, perawatan, *slip clutch*