



Engine Health Diagnostic Prior to Overhaul saved ~\$52,000 by optimizing the scope of one overhaul

INDUSTRY SEGMENT:	Oil & Gas
CUSTOMER:	Jack Up rig operator in India
EQUIPMENT:	3516B Caterpillar diesel engines
ARM SOLUTION:	Engine Health Diagnostics through torsional vibration solution

CHALLENGE

- A Caterpillar 3516B engine was **due for the 2nd Top End Overhaul as per the OEM recommendation based on the running hours**, but the rig owner had a **budget constraint**

SOLUTION

- Neptunus has been a **preferred partner** to this customer for engine maintenance across their multiple rigs
- Neptunus' expert **advised for pre-overhaul diagnostics using torsional vibration analysis**. The objective was to **optimize the spare parts list, consumables, manpower and downtime** of overhaul
- Neptunus' team went onboard & carried out the engine health inspection through **torsional vibration tool**
- The report data **showed issues with the fuel injection quality and the crankshaft main bearings**. Other health parameters were within acceptable limits. Based on this data, **Neptunus recommended only a Top End Overhaul instead of a 2nd Top End Overhaul**
- The diagnostic findings were reaffirmed when the engine was dismantled for a Top End Overhaul. The hatch marks on the liner & cylinder bore dimensions were observed to be in limits as per the OEM recommendation.
- Engine has been running smoothly for over 6000 hours after the Top End Overhaul**

Cylinder Specific Indicators					
	Compression	Injection Timing	Injection Condition	Bearing	Misfiring
Overall Information	27% ●	0% ●	0% ●	83% ●	100% ●
Cylinder 1	▬	▬	▬	▬	▬
Cylinder 3	▬	▬	▬	▬	▬
Cylinder 6	▬	▬	▬	▬	▬
⋮	⋮	⋮	⋮	⋮	⋮
Cylinder X	▬	▬	▬	▬	▬

BENEFITS

- Direct savings of ~USD 52,000** due to lesser cost of overhaul. This **increased the profitability** of the rig.
- We **saved 4 days due to the reduced scope** (8 days vs 12 days) thus expediting the rig repair project.
- It allowed the rig and technical teams to **focus on the core drilling operations rather than worry about the uncertainty of engine reliability**.