

# Cold corrosion mitigated. Feed rates lowered by 45 per cent.

JPO Tucana | Wärtsilä 7RT-flex96C engine



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Mobilgard™ 5100 cylinder lubricant mitigated cold corrosion effects on the JPO Tucana's Wärtsilä 7RT-flex96 engine while reducing feed rates by 45 per cent. Results also showed Mobilgard 5100 oil improved piston and cylinder liner cleanliness.

## Situation

Schiffahrtsgesellschaft Oltmann mbH & Co. KG, the operator of container vessel M/V JPO Tucana, was concerned about cold corrosion found during a routine inspection of the Wärtsilä 7RT-flex96C engine. This prompted replacement of all piston rings and an increase in feed rates in order to safeguard against future damage. The JPO Tucana was running an industry-standard 70 BN cylinder oil.

## Recommendation

To mitigate further cold corrosion, ExxonMobil recommended a trial of Mobilgard 5100 cylinder oil. JPO Tucana operated at engine loads between 30 to 48 per cent maximum continuous rating and burned heavy fuel oil with sulphur levels between 2.5 and 2.81 per cent throughout the trial. ExxonMobil recommended feed rates begin at 1.2 g/kWh, with gradual reduction in 0.1 g/kWh increments. Pistons 1 to 5 were lubricated with Mobilgard 5100 oil, while pistons 6 and 7 maintained operating a 70 BN oil to enable a comparison of relative performance.

## Impact

The tests showed minimal wear on cylinder liners and piston rings. However, pistons using the 70 BN cylinder oil required a higher feed rate of 1.1 g/kWh, while Mobilgard 5100 cylinder oil allowed a feed rate as low as 0.65 g/kWh. Liner wear rates for both oils were less than 0.01 mm/1,000 hours, indicating negligible wear.

Laboratory analysis of scrape-down samples of Mobilgard 5100 oil confirmed an average BN retention of approximately 51mgKOH/g and iron concentrations of less than 62 ppm at feed rates of approximately 0.9g/kWh.

Results confirmed the potential of Mobilgard 5100 cylinder oil to protect JPO Tucana's engine from cold corrosion while maintaining engine cleanliness and reducing feed rates by 45 per cent.



Unit 1 at interim inspection

Based on the experience of a single customer. Actual results can vary depending upon the type of equipment used and its maintenance, operating conditions and environment, and any prior lubricant used.

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