

OIL ANALYSIS REPORT

VOLVO PENTA

DARK & STORMY PB 0638102 - STARBOARD DIESEL ENGINE

Sample No: VPA058929
Oil Type: YANMAR 5W40

SAMPLE INFORMATION

| | | | | |
|---------------|--------------------|-------------|-------------|-------------|
| Sample Number | VPA058929 | VPA041303 | VPA031331 | VPA033985 |
| Sample Date | 05 Dec 2023 | 05 Jan 2023 | 02 Nov 2021 | 13 Jan 2021 |
| Machine Hours | 657 | 593 | 556 | 0 |
| Oil Hours | 67 | 0 | 0 | 0 |
| Oil Changed | Changed | N/A | Not Changd | N/A |
| Sample Status | NORMAL | NORMAL | NORMAL | ATTENTION |

The Talaria Company

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OIL CONDITION

| | | | | | |
|------------------|----------|-------------|------|------|--------|
| Visc @ 100°C | cSt | 13.3 | 13.6 | 14.6 | ▲ 18.9 |
| Base Number (BN) | mg KOH/g | 8.0 | 8.6 | --- | --- |
| Oxidation (PA) | % | 52 | 53 | 57 | 63 |

CONTAMINATION

| | | | | | |
|----------------|-----|----------------|------|------|------|
| Water | % | NEG | NEG | NEG | NEG |
| Soot % | % | 0.8 | 0.9 | 1.6 | 2.8 |
| Nitration (PA) | % | 66 | 68 | 78 | 98 |
| Sulfation (PA) | % | 53 | 54 | 59 | 67 |
| Glycol | % | NEG | NEG | NEG | NEG |
| Fuel | % | <1.0 | <1.0 | <1.0 | <1.0 |
| Silicon | ppm | 4 | 5 | 6 | 8 |
| Sodium | ppm | 1 | 3 | 5 | 4 |
| Potassium | ppm | 5 | 3 | 6 | 0 |

WEAR METALS

| | | | | | |
|------------|-----|--------------|----|----|-----|
| Iron | ppm | 17 | 21 | 35 | 48 |
| Copper | ppm | 33 | 36 | 48 | 55 |
| Lead | ppm | <1 | 2 | 2 | 0 |
| Tin | ppm | 0 | <1 | <1 | 5 |
| Aluminum | ppm | 3 | 5 | 8 | 4 |
| Chromium | ppm | <1 | <1 | 1 | 1 |
| Molybdenum | ppm | 22 | 21 | 18 | 2 |
| Nickel | ppm | <1 | 2 | 5 | ▲ 7 |
| Titanium | ppm | 0 | 0 | <1 | <1 |
| Silver | ppm | 0 | 0 | 0 | 0 |
| Manganese | ppm | 0 | <1 | <1 | <1 |
| Vanadium | ppm | 0 | <1 | <1 | 0 |

ADDITIVES

| | | | | | |
|------------|-----|-------------|------|------|------|
| Calcium | ppm | 1381 | 1489 | 1615 | 1637 |
| Magnesium | ppm | 492 | 526 | 544 | 535 |
| Zinc | ppm | 1060 | 1080 | 1079 | 877 |
| Phosphorus | ppm | 917 | 916 | 962 | 734 |
| Barium | ppm | 3 | 0 | 0 | 1 |
| Boron | ppm | 116 | 107 | 101 | 66 |

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Depot: VP592286
Unique No: 10778835
Signed: Don Baldrige
Report Date: 11 Dec 2023

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GRAPHS

