

OIL ANALYSIS REPORT

VOLVO PENTA

DORR WALTER VOLVO PENTA 20069039673 - STARBOARD DIESEL ENGINE

Sample No: VPA055870

Oil Type: VOLVO VDS-4.5 Premium Motor Oil 15W40

SAMPLE INFORMATION

| | | | | |
|---------------|-------------|-------------|-------------|-------------|
| Sample Number | VPA055870 | VPA047208 | VPA034247 | VPA027691 |
| Sample Date | 13 Oct 2023 | 01 Oct 2022 | 17 Oct 2021 | 20 Jul 2020 |
| Machine Hours | 830 | 772 | 710 | 588 |
| Oil Hours | 60 | 70 | 70 | 0 |
| Oil Changed | Changed | Changed | Changed | N/A |
| Sample Status | NORMAL | NORMAL | NORMAL | NORMAL |

Bayview Yachtcrafters Inc

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US 48045

Contact: Shawn Robertson

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OIL CONDITION

| | | | | | |
|------------------|----------|------|------|------|------|
| Visc @ 100°C | cSt | 13.6 | 13.8 | 13.7 | 14.0 |
| Base Number (BN) | mg KOH/g | 10.2 | 11.5 | 10.3 | --- |
| Oxidation (PA) | % | 61 | 66 | 66 | 56 |

CONTAMINATION

| | | | | | |
|----------------|-----|------|------|------|------|
| Soot % | % | 0.2 | 0.2 | 0.2 | 0.1 |
| Nitration (PA) | % | 57 | 65 | 64 | 48 |
| Sulfation (PA) | % | 55 | 58 | 57 | 52 |
| Glycol | % | NEG | NEG | NEG | NEG |
| Fuel | % | <1.0 | <1.0 | <1.0 | <1.0 |
| Silicon | ppm | 4 | 4 | 5 | 4 |
| Sodium | ppm | 3 | <1 | 0 | 2 |
| Potassium | ppm | 2 | <1 | <1 | 0 |

WEAR METALS

| | | | | | |
|------------|-----|----|----|----|----|
| Iron | ppm | 5 | 7 | 19 | 4 |
| Copper | ppm | 4 | 4 | 6 | 2 |
| Lead | ppm | <1 | 1 | 2 | 1 |
| Tin | ppm | <1 | <1 | <1 | 0 |
| Aluminum | ppm | 3 | 1 | 3 | 6 |
| Chromium | ppm | <1 | <1 | <1 | <1 |
| Molybdenum | ppm | 64 | 61 | 60 | 69 |
| Nickel | ppm | <1 | <1 | <1 | 1 |
| Titanium | ppm | <1 | 0 | 0 | <1 |
| Silver | ppm | 0 | <1 | <1 | 0 |
| Manganese | ppm | 0 | <1 | <1 | <1 |
| Vanadium | ppm | <1 | 0 | 0 | 0 |

ADDITIVES

| | | | | | |
|------------|-----|------|------|------|------|
| Calcium | ppm | 1067 | 1076 | 1173 | 1259 |
| Magnesium | ppm | 1005 | 967 | 994 | 1213 |
| Zinc | ppm | 1283 | 1305 | 1210 | 1326 |
| Phosphorus | ppm | 1076 | 1060 | 1129 | 1212 |
| Barium | ppm | <1 | 0 | 0 | 0 |
| Boron | ppm | 0 | 3 | 6 | 1 |

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 acceptable for the time in service.

Depot: VP151756

Unique No: 10723690

Signed: Don Baldrige

Report Date: 02 Nov 2023

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PENTA**

GRAPHS

