

OIL ANALYSIS REPORT



ALASKA LUXURY TOURS CLIF/FORGE STBD VOLVO PENTA 2006016955 - STARBOARD DIESEL ENGINE

Sample No: VPA036542
Oil Type: DIESEL ENGINE OIL SAE 40

SAMPLE INFORMATION

| | | | | |
|---------------|--------------------|-------------|-------------|-------------|
| Sample Number | VPA036542 | VPA056361 | VPA055124 | VPA035047 |
| Sample Date | 09 Aug 2023 | 04 Jul 2023 | 07 Jun 2023 | 12 Aug 2022 |
| Machine Hours | 2739 | 2510 | 2326 | 1936 |
| Oil Hours | 230 | 184 | 207 | 201 |
| Oil Changed | Changed | Changed | Changed | Changed |
| Sample Status | NORMAL | NORMAL | NORMAL | NORMAL |

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 570 N.E. Tomahawk Isl. Dr.
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OIL CONDITION

| | | | | | |
|------------------|----------|-------------|------|------|------|
| Visc @ 100°C | cSt | 14.9 | 14.8 | 14.9 | 15.2 |
| Base Number (BN) | mg KOH/g | 9.2 | 10.1 | 10.0 | 10.6 |
| Oxidation (PA) | % | 61 | 65 | 65 | 65 |

CONTAMINATION

| | | | | | |
|----------------|-----|----------------|------|------|------|
| Soot % | % | 0.6 | 0.5 | 0.4 | 0.6 |
| Nitration (PA) | % | 67 | 70 | 68 | 75 |
| Sulfation (PA) | % | 54 | 57 | 56 | 58 |
| Glycol | % | NEG | NEG | NEG | NEG |
| Fuel | % | <1.0 | <1.0 | <1.0 | <1.0 |
| Silicon | ppm | 3 | 3 | 4 | 4 |
| Sodium | ppm | 2 | <1 | 1 | 2 |
| Potassium | ppm | <1 | 2 | 2 | 2 |

WEAR METALS

| | | | | | |
|------------|-----|--------------|----|----|----|
| Iron | ppm | 16 | 13 | 19 | 17 |
| Copper | ppm | 9 | 6 | 6 | 8 |
| Lead | ppm | <1 | 1 | <1 | 2 |
| Tin | ppm | <1 | <1 | <1 | 1 |
| Aluminum | ppm | 0 | 3 | 3 | 3 |
| Chromium | ppm | <1 | <1 | 2 | 1 |
| Molybdenum | ppm | 62 | 58 | 60 | 65 |
| Nickel | ppm | 2 | 2 | 1 | 1 |
| Titanium | ppm | <1 | <1 | 0 | 0 |
| Silver | ppm | 0 | 0 | 0 | 0 |
| Manganese | ppm | <1 | <1 | <1 | <1 |
| Vanadium | ppm | <1 | <1 | 0 | 0 |

ADDITIVES

| | | | | | |
|------------|-----|-------------|------|------|------|
| Calcium | ppm | 1185 | 1074 | 1155 | 1081 |
| Magnesium | ppm | 1039 | 952 | 1031 | 947 |
| Zinc | ppm | 1332 | 1233 | 1300 | 1232 |
| Phosphorus | ppm | 1082 | 966 | 1038 | 1020 |
| Barium | ppm | 0 | 0 | 0 | 0 |
| Boron | ppm | 4 | 0 | 0 | 4 |

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. Confirm oil type. The condition of the oil is acceptable for the time in service.

Depot: VP154394
Unique No: 10609094
Signed: Sean Felton
Report Date: 22 Aug 2023

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GRAPHS

