

# OIL ANALYSIS REPORT

# VOLVO PENTA

## PHILIP HASBROUCK VOLVO PENTA A865017 - STARBOARD DIESEL ENGINE

Sample No: VPA056177

Oil Type: VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3

### SAMPLE INFORMATION

|               |             |             |     |     |
|---------------|-------------|-------------|-----|-----|
| Sample Number | VPA056177   | VPA023387   | --- | --- |
| Sample Date   | 13 Oct 2023 | 16 Apr 2019 | --- | --- |
| Machine Hours | 552         | 85          | --- | --- |
| Oil Hours     | 0           | 85          | --- | --- |
| Oil Changed   | Not Changd  | Not Changd  | --- | --- |
| Sample Status | NORMAL      | NORMAL      | --- | --- |

### OIL CONDITION

|                  |          |        |         |     |     |
|------------------|----------|--------|---------|-----|-----|
| Visc @ 100°C     | cSt      | █ 13.4 | █ 13.52 | --- | --- |
| Base Number (BN) | mg KOH/g | █ 9.9  | ---     | --- | --- |
| Oxidation (PA)   | %        | 56     | 36      | --- | --- |

### CONTAMINATION

|                |     |       |       |     |     |
|----------------|-----|-------|-------|-----|-----|
| Soot %         | %   | █ 0.4 | █ 0.1 | --- | --- |
| Nitration (PA) | %   | 53    | 40    | --- | --- |
| Sulfation (PA) | %   | 53    | 40    | --- | --- |
| Glycol         | %   | NEG   | NEG   | --- | --- |
| Fuel           | %   | <1.0  | <1.0  | --- | --- |
| Silicon        | ppm | █ 8   | █ 15  | --- | --- |
| Sodium         | ppm | █ 2   | █ 3   | --- | --- |
| Potassium      | ppm | █ <1  | █ 3   | --- | --- |

### WEAR METALS

|            |     |      |      |     |     |
|------------|-----|------|------|-----|-----|
| Iron       | ppm | █ 19 | █ 12 | --- | --- |
| Copper     | ppm | █ 8  | █ 9  | --- | --- |
| Lead       | ppm | █ 1  | █ 1  | --- | --- |
| Tin        | ppm | █ 1  | █ 1  | --- | --- |
| Aluminum   | ppm | █ 4  | █ 14 | --- | --- |
| Chromium   | ppm | █ <1 | █ 2  | --- | --- |
| Molybdenum | ppm | █ 58 | █ 43 | --- | --- |
| Nickel     | ppm | █ 2  | █ <1 | --- | --- |
| Titanium   | ppm | █ 0  | █ 0  | --- | --- |
| Silver     | ppm | █ 0  | █ 0  | --- | --- |
| Manganese  | ppm | █ <1 | █ 2  | --- | --- |
| Vanadium   | ppm | 0    | 0    | --- | --- |

### ADDITIVES

|            |     |        |        |     |     |
|------------|-----|--------|--------|-----|-----|
| Calcium    | ppm | █ 1038 | █ 1071 | --- | --- |
| Magnesium  | ppm | █ 932  | █ 936  | --- | --- |
| Zinc       | ppm | █ 1238 | █ 1203 | --- | --- |
| Phosphorus | ppm | █ 906  | █ 1018 | --- | --- |
| Barium     | ppm | █ 0    | █ 0    | --- | --- |
| Boron      | ppm | █ 2    | █ 7    | --- | --- |

**MARINE DIESEL SERVICES INC**  
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### Diagnosis

Resample at the next service interval to monitor. Metal levels are typical for a new component breaking in. 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: VP288530  
Unique No: 10696633  
Signed: Sean Felton  
Report Date: 17 Oct 2023

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## GRAPHS

