



OIL ANALYSIS REPORT

|                 |                 |
|-----------------|-----------------|
| WEAR            | <b>ABNORMAL</b> |
| CONTAMINATION   | <b>NORMAL</b>   |
| FLUID CONDITION | <b>NORMAL</b>   |

Area  
**GREG MORRIS**  
Machine Id  
**VOLVO PENTA GREG MORRIS (S/N N/A)**  
Component  
**Center Diesel Engine**  
Fluid  
**SHELL ROTELLA T 15W40 (10 QTS)**

**RECOMMENDATION**

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|----------|----------|
| Sample Number  |     | Client Info |           | <b>VPA058598</b>   | ---      | ---      |
| Sample Date    |     | Client Info |           | <b>26 Jun 2024</b> | ---      | ---      |
| Machine Age    | hrs | Client Info |           | <b>1000</b>        | ---      | ---      |
| Oil Age        | hrs | Client Info |           | <b>5</b>           | ---      | ---      |
| Filter Age     | hrs | Client Info |           | <b>0</b>           | ---      | ---      |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | ---      | ---      |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | ---      | ---      |
| Sample Status  |     |             |           | <b>ABNORMAL</b>    | ---      | ---      |

**WEAR**

The aluminum level is abnormal. Piston wear is indicated.

|              |        |             |      |              |     |     |
|--------------|--------|-------------|------|--------------|-----|-----|
| Iron         | ppm    | ASTM D5185m | >80  | <b>27</b>    | --- | --- |
| Chromium     | ppm    | ASTM D5185m | >6   | <b>4</b>     | --- | --- |
| Nickel       | ppm    | ASTM D5185m | >2   | <b>&lt;1</b> | --- | --- |
| Titanium     | ppm    | ASTM D5185m | >2   | <b>&lt;1</b> | --- | --- |
| Silver       | ppm    | ASTM D5185m | >2   | <b>0</b>     | --- | --- |
| Aluminum     | ppm    | ASTM D5185m | >20  | <b>▲ 30</b>  | --- | --- |
| Lead         | ppm    | ASTM D5185m | >95  | <b>1</b>     | --- | --- |
| Copper       | ppm    | ASTM D5185m | >85  | <b>3</b>     | --- | --- |
| Tin          | ppm    | ASTM D5185m | >9   | <b>&lt;1</b> | --- | --- |
| Vanadium     | ppm    | ASTM D5185m |      | <b>0</b>     | --- | --- |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | --- | --- |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | --- | --- |

**CONTAMINATION**

There is no indication of any contamination in the oil.

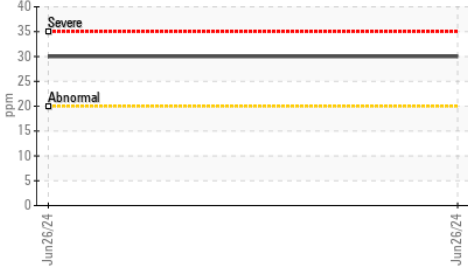
|                  |          |             |       |                |     |     |
|------------------|----------|-------------|-------|----------------|-----|-----|
| Silicon          | ppm      | ASTM D5185m | >25   | <b>10</b>      | --- | --- |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>4</b>       | --- | --- |
| Fuel             |          | WC Method   | >4.0  | <b>&lt;1.0</b> | --- | --- |
| Water            |          | WC Method   | >0.1  | <b>NEG</b>     | --- | --- |
| Glycol           |          | WC Method   |       | <b>NEG</b>     | --- | --- |
| Soot %           | %        | *ASTM D7844 |       | <b>0.2</b>     | --- | --- |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>5.5</b>     | --- | --- |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>20.7</b>    | --- | --- |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Debris           | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Sand/Dirt        | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Appearance       | scalar   | *Visual     | NORML | <b>NORML</b>   | --- | --- |
| Odor             | scalar   | *Visual     | NORML | <b>NORML</b>   | --- | --- |
| Emulsified Water | scalar   | *Visual     | >0.1  | <b>NEG</b>     | --- | --- |

**FLUID CONDITION**

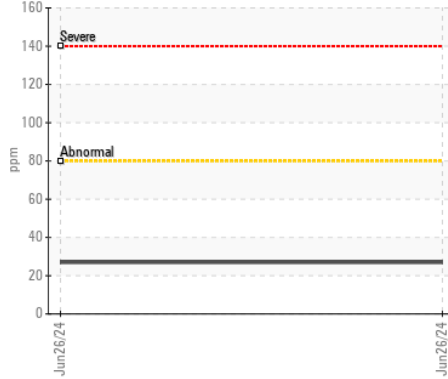
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

|                  |          |             |      |              |     |     |
|------------------|----------|-------------|------|--------------|-----|-----|
| Sodium           | ppm      | ASTM D5185m |      | <b>&lt;1</b> | --- | --- |
| Boron            | ppm      | ASTM D5185m | 316  | <b>163</b>   | --- | --- |
| Barium           | ppm      | ASTM D5185m | 0.0  | <b>0</b>     | --- | --- |
| Molybdenum       | ppm      | ASTM D5185m | 1.2  | <b>&lt;1</b> | --- | --- |
| Manganese        | ppm      | ASTM D5185m |      | <b>&lt;1</b> | --- | --- |
| Magnesium        | ppm      | ASTM D5185m | 24   | <b>29</b>    | --- | --- |
| Calcium          | ppm      | ASTM D5185m | 2292 | <b>2326</b>  | --- | --- |
| Phosphorus       | ppm      | ASTM D5185m | 1064 | <b>1048</b>  | --- | --- |
| Zinc             | ppm      | ASTM D5185m | 1160 | <b>1268</b>  | --- | --- |
| Sulfur           | ppm      | ASTM D5185m | 4996 | <b>4480</b>  | --- | --- |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | <b>16.6</b>  | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 10.1 | <b>9.0</b>   | --- | --- |
| Visc @ 100°C     | cSt      | ASTM D445   | 15.7 | <b>14.4</b>  | --- | --- |

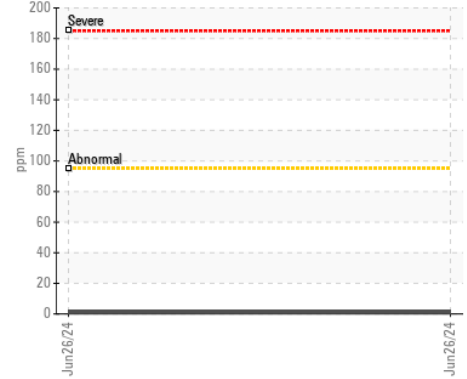
▲ Aluminum (ppm)



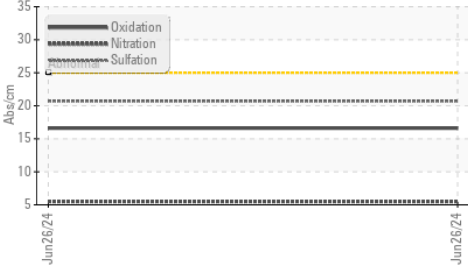
Iron (ppm)



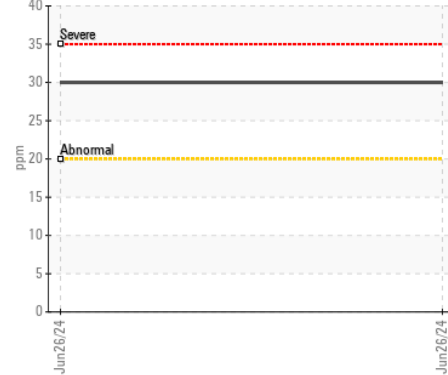
Lead (ppm)



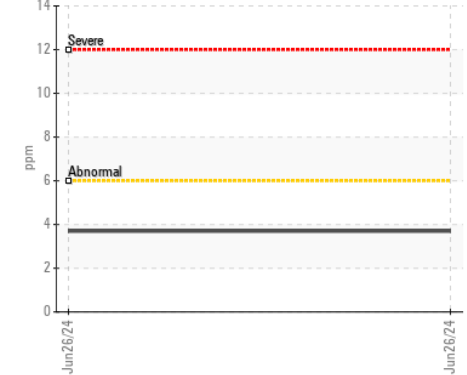
FT-IR (Direct Trend)



▲ Aluminum (ppm)



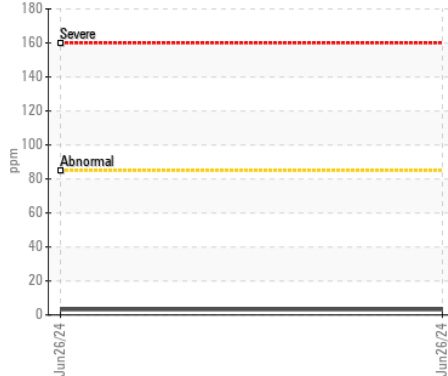
Chromium (ppm)



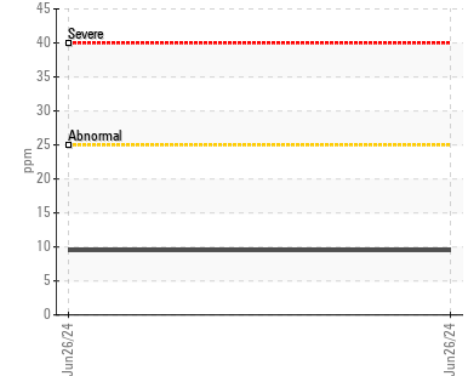
Base Number



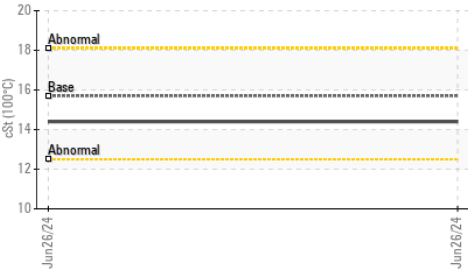
Copper (ppm)



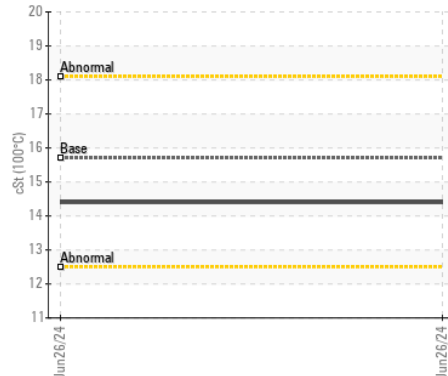
Silicon (ppm)



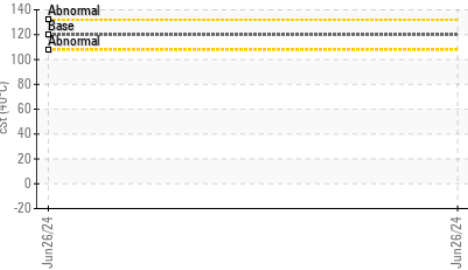
Viscosity @ 100°C



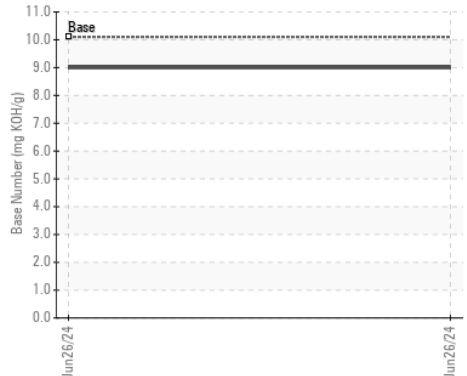
Viscosity @ 100°C



Viscosity @ 40°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : VPA058598

Lab Number : 06224265

Unique Number : 11102462

Test Package : MOB 1 ( Additional Tests: KV40, TBN )

Received : 01 Jul 2024

Tested : 02 Jul 2024

Diagnosed : 02 Jul 2024 - Jonathan Hester

Thomaston Boat & Engine Works Inc.

2 Atlantic Hwy

THOMASTON, ME

US 04861

Contact: Patrick Ricci

pricci@mindspring.com

T:

F:

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)