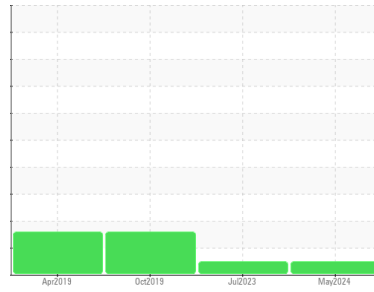




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id  
**VOLVO PENTA 3194010489**  
 Component  
**Starboard IPS**  
 Fluid  
**VOLVO API GL-5 SAE 75W90 (--- GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION |             | method      | limit/base | current            | history1    | history2    |
|--------------------|-------------|-------------|------------|--------------------|-------------|-------------|
| Sample Number      | Client Info |             |            | <b>WC0944529</b>   | WC0835975   | WC0396134   |
| Sample Date        | Client Info |             |            | <b>18 May 2024</b> | 09 Jul 2023 | 13 Oct 2019 |
| Machine Age        | hrs         | Client Info |            | <b>400</b>         | 300         | 310         |
| Oil Age            | hrs         | Client Info |            | <b>50</b>          | 115         | 60          |
| Oil Changed        | Client Info |             |            | <b>Not Changed</b> | Not Changed | Not Changed |
| Sample Status      |             |             |            | <b>NORMAL</b>      | NORMAL      | ABNORMAL    |

| CONTAMINATION |           | method | limit/base | current    | history1 | history2 |
|---------------|-----------|--------|------------|------------|----------|----------|
| Water         | WC Method |        | >0.2       | <b>NEG</b> | NEG      | NEG      |

| WEAR METALS |     | method      | limit/base | current      | history1 | history2 |
|-------------|-----|-------------|------------|--------------|----------|----------|
| Iron        | ppm | ASTM D5185m | >200       | <b>33</b>    | 164      | 74       |
| Chromium    | ppm | ASTM D5185m | >10        | <b>&lt;1</b> | <1       | <1       |
| Nickel      | ppm | ASTM D5185m | >10        | <b>1</b>     | 3        | 1        |
| Titanium    | ppm | ASTM D5185m |            | <b>&lt;1</b> | 0        | 0        |
| Silver      | ppm | ASTM D5185m |            | <b>1</b>     | 0        | 0        |
| Aluminum    | ppm | ASTM D5185m |            | <b>1</b>     | 2        | 2        |
| Lead        | ppm | ASTM D5185m |            | <b>&lt;1</b> | <1       | 2        |
| Copper      | ppm | ASTM D5185m |            | <b>6</b>     | 17       | 12       |
| Tin         | ppm | ASTM D5185m |            | <b>&lt;1</b> | 0        | <1       |
| Antimony    | ppm | ASTM D5185m | >5         | <b>---</b>   | ---      | 2        |
| Vanadium    | ppm | ASTM D5185m |            | <b>&lt;1</b> | 0        | 0        |
| Cadmium     | ppm | ASTM D5185m |            | <b>&lt;1</b> | 0        | 0        |

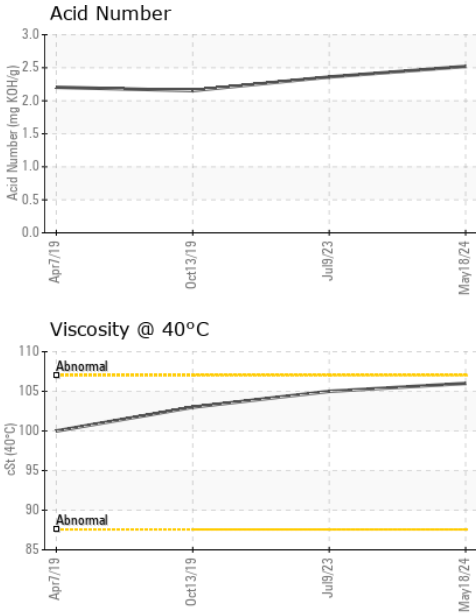
| ADDITIVES  |     | method      | limit/base | current      | history1 | history2 |
|------------|-----|-------------|------------|--------------|----------|----------|
| Boron      | ppm | ASTM D5185m |            | <b>333</b>   | 324      | 262      |
| Barium     | ppm | ASTM D5185m |            | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm | ASTM D5185m |            | <b>&lt;1</b> | <1       | <1       |
| Manganese  | ppm | ASTM D5185m |            | <b>1</b>     | 3        | 1        |
| Magnesium  | ppm | ASTM D5185m |            | <b>4</b>     | 3        | <1       |
| Calcium    | ppm | ASTM D5185m |            | <b>0</b>     | 12       | 5        |
| Phosphorus | ppm | ASTM D5185m |            | <b>1235</b>  | 1344     | 1269     |
| Zinc       | ppm | ASTM D5185m |            | <b>4</b>     | 13       | 18       |
| Sulfur     | ppm | ASTM D5185m |            | <b>25242</b> | 23216    | 11239    |

| CONTAMINANTS |     | method      | limit/base | current      | history1 | history2 |
|--------------|-----|-------------|------------|--------------|----------|----------|
| Silicon      | ppm | ASTM D5185m |            | <b>12</b>    | 16       | 26       |
| Sodium       | ppm | ASTM D5185m |            | <b>2</b>     | 3        | 7        |
| Potassium    | ppm | ASTM D5185m | >20        | <b>&lt;1</b> | 2        | <1       |

| FLUID DEGRADATION |          | method     | limit/base | current     | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN)  | mg KOH/g | ASTM D8045 |            | <b>2.52</b> | 2.36     | 2.154    |



# OIL ANALYSIS REPORT



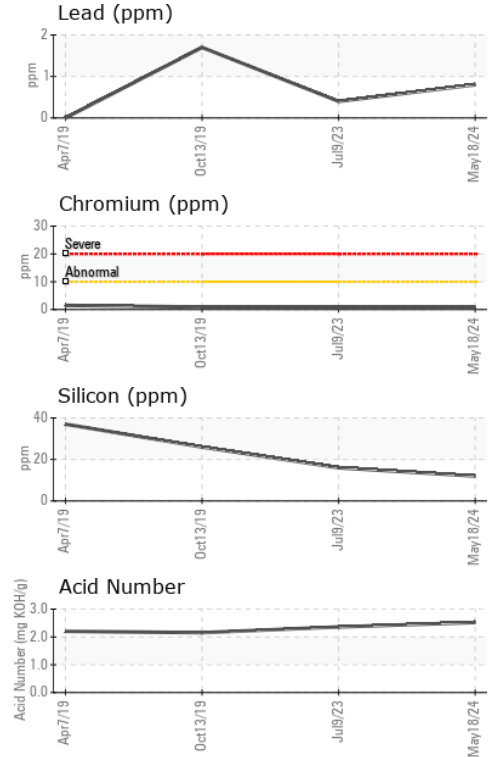
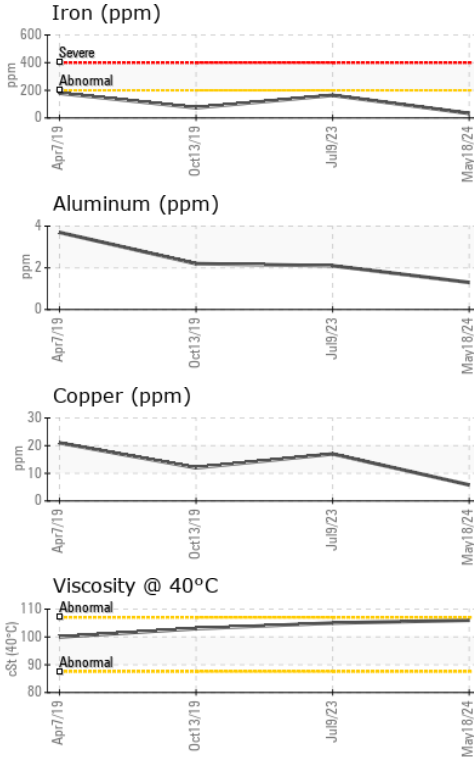
| VISUAL           | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | LIGHT    |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
| Precipitate      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Silt             | scalar | *Visual    | NONE    | NONE     | NONE     |
| Debris           | scalar | *Visual    | NONE    | NONE     | NONE     |
| Sand/Dirt        | scalar | *Visual    | NONE    | NONE     | NONE     |
| Appearance       | scalar | *Visual    | NORML   | NORML    | NORML    |
| Odor             | scalar | *Visual    | NORML   | NORML    | NORML    |
| Emulsified Water | scalar | *Visual    | >0.2    | NEG      | 0.2%     |
| Free Water       | scalar | *Visual    |         | NEG      | NEG      |

| FLUID PROPERTIES | method | limit/base | current    | history1 | history2 |
|------------------|--------|------------|------------|----------|----------|
| Visc @ 40°C      | cSt    | ASTM D445  | <b>106</b> | 105      | 103      |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
|---------------|--------|------------|---------|----------|----------|

|        |  |          |          |
|--------|--|----------|----------|
| Color  |  | no image | no image |
| Bottom |  | no image | no image |

## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0944529      **Received** : 29 May 2024  
**Lab Number** : **06194225**      **Tested** : 30 May 2024  
**Unique Number** : 11056348      **Diagnosed** : 31 May 2024 - Angela Borella  
**Test Package** : MOB 2

**DELOITTE & TOUCHE LLP**  
 4501 SW 192ND TER  
 SOUTHWEST RANCHES, FL  
 US 33332  
 Contact: JAMES MINESSALE  
 jminessale@deloitte.com

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)