

OIL ANALYSIS REPORT

FLEET Machine Id VOLVO VN 7993 (S/N 4V4MC9EG4EN173845) Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (42 QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

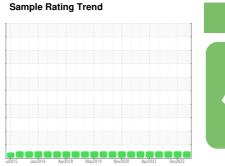
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

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



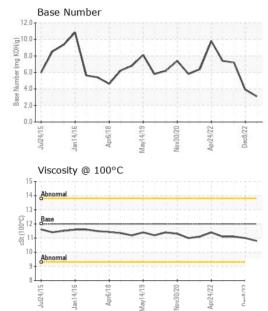


NORMAL

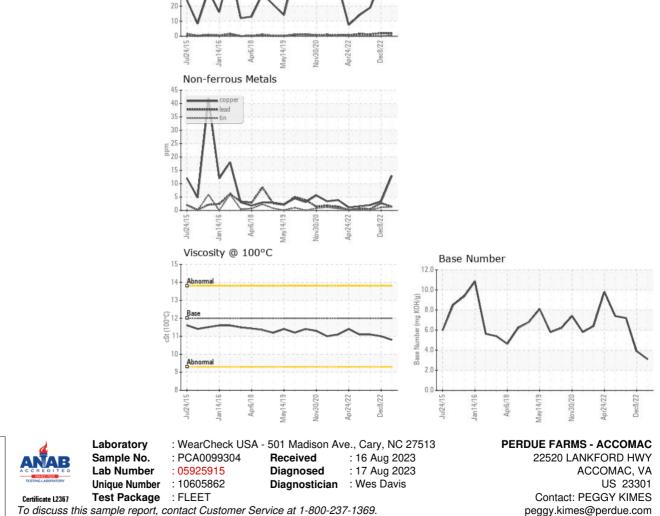
| SAMPLE INFORI | MATION | method | limit/base | current | history1 | history2 |
|---|--|--|--|---|--|---|
| Sample Number | | Client Info | | PCA0099304 | PCA0082264 | PCA0076781 |
| Sample Date | | Client Info | | 10 Aug 2023 | 08 Dec 2022 | 08 Sep 2022 |
| Machine Age | mls | Client Info | | 667605 | 634633 | 612052 |
| Oil Age | mls | Client Info | | 32972 | 39903 | 17322 |
| Oil Changed | | Client Info | | Changed | Changed | Not Changd |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >6.0 | <1.0 | <1.0 | <1.0 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| - | | | line it //s e e e | | | |
| WEAR METAL | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >100 | 75 | 37 | 19 |
| Chromium | ppm | ASTM D5185m | >20 | 2 | 2 | 1 |
| Nickel | ppm | | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >25 | 15 | 19 | 15 |
| Lead | ppm | ASTM D5185m | >40 | 1 | 3 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 13 | 3 | 2 |
| Tin | ppm | | >15 | 1 | 1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | | limit/base | current 2 | history1 2 | history2 0 |
| | ppm ppm | | 2 | | | |
| Boron | | ASTM D5185m | 2 | 2 | 2 | 0 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 2 0 50 | 2 0 | 2 0 | 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 | 2 0 58 | 2 0 58 | 0 0 56 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 | 2 0 58 2 | 2 0 58 <1 | 0 0 56 <1 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 | 2 0 58 2 918 | 2 0 58 <1 882 | 0 0 56 <1 879 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 | 2 0 58 2 918 1058 | 2 0 58 <1 882 1062 | 0 0 56 <1 879 1046 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 | 2 0 58 2 918 1058 945 | 2 0 58 <1 882 1062 894 | 0 0 56 <1 879 1046 942 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 | 2 0 58 2 918 1058 945 1241 2922 | 2 0 58 <1 882 1062 894 1144 | 0 0 56 <1 879 1046 942 1153 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | 2 0 58 2 918 1058 945 1241 2922 | 2 0 58 <1 882 1062 894 1144 2536 | 0 0 56 <1 879 1046 942 1153 2651 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | 2 0 58 2 918 1058 945 1241 2922 current | 2 0 58 <1 882 1062 894 1144 2536 history1 | 0 0 56 <1 879 1046 942 1153 2651 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | 2 0 58 2 918 1058 945 1241 2922 current 11 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 limit/base >25 | 2 0 58 2 918 1058 945 1241 2922 current 11 22 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm | ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 limit/base >25 | 2 0 58 2 918 1058 945 1241 2922 current 11 22 15 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >25 -25 | 2 0 58 2 918 1058 945 1241 2922 current 11 22 15 current | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 history1 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 21 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm | ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3 | 2 0 58 2 918 1058 945 1241 2922 <u>current</u> 11 22 15 <u>current</u> 0.4 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 history1 0.5 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 history2 0.3 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 <i>limit/base</i> >25 >20 <i>limit/base</i> | 2 0 58 2 918 1058 945 1241 2922 <i>current</i> 11 222 15 <i>current</i> 0.4 10.8 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 history1 0.5 13.4 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 history2 0.3 9.8 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 | 2 0 50 1050 955 1050 995 1180 2600 imit/base >25 imit/base >3 >20 | 2 0 58 2 918 1058 945 1241 2922 current 11 22 15 current 0.4 10.8 22.9 | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 history1 0.5 13.4 27.1 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 history2 0.3 9.8 22.7 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 | 2 0 0 50 0 950 1050 995 1180 2600 2600 25 20 220 20 20 3 20 20 3 3 20 3 3 20 3 3 20 3 3 20 3 3 20 3 3 20 3 3 20 3 3 20 20 3 3 20 3 3 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20 | 2 0 58 2 918 1058 945 1241 2922 <i>current</i> 11 222 15 <i>current</i> 0.4 10.8 22.9 <i>current</i> | 2 0 58 <1 882 1062 894 1144 2536 history1 9 18 26 history1 0.5 13.4 27.1 history1 | 0 0 56 <1 879 1046 942 1153 2651 history2 6 12 21 history2 0.3 9.8 22.7 history2 |



OIL ANALYSIS REPORT



| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |
| FLUID PROPE | RTIES | method | limit/base | current | history1 | history2 |
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | 10.8 | 11.0 | 11.1 |
| GRAPHS | | | | | | |
| Ferrous Alloys | | | | | | |
| 80 70 iron | | | 1 | | | |
| 60 - nickel | | | | | | |
| 50 - | | | 1 | | | |



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.

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

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