

OIL ANALYSIS REPORT

Sample Rating Trend



FREIGHTLINER 481907 Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (24 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.

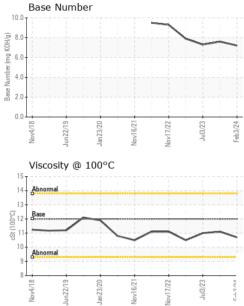
Fluid Condition

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

| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|--|--|
| Sample Number | | Client Info | | PCA0117071 | PCA0106282 | PCA0101318 |
| Sample Date | | Client Info | | 03 Feb 2024 | 13 Oct 2023 | 03 Jul 2023 |
| Machine Age | mls | Client Info | | 0 | 211357 | 191182 |
| Oil Age | mls | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >80 | 27 | 25 | 29 |
| Chromium | ppm | ASTM D5185m | >5 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >30 | 8 | 7 | 3 |
| Lead | ppm | ASTM D5185m | >30 | <1 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >150 | 2 | 2 | 2 |
| Tin | ppm | ASTM D5185m | >5 | <1 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current <1 | history1 2 | history2 5 |
| | ppm ppm | ASTM D5185m | | | | |
| Boron | | ASTM D5185m | 2 | <1 | 2 | 5 |
| Boron Barium | ppm | ASTM D5185m ASTM D5185m | 2 0 50 | <1 0 | 2 0 | 5 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 | <1 0 62 | 2 0 60 | 5 0 63 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 | <1 0 62 <1 | 2 0 60 <1 | 5 0 63 <1 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 | <1 0 62 <1 941 | 2 0 60 <1 925 1023 1047 | 5 0 63 <1 836 1098 982 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 | <1 0 62 <1 941 1123 | 2 0 60 <1 925 1023 1047 1227 | 5 0 63 <1 836 1098 982 1172 |
| 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 50 950 1050 995 | <1 0 62 <1 941 1123 1065 | 2 0 60 <1 925 1023 1047 | 5 0 63 <1 836 1098 982 |
| 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 0 950 1050 995 1180 | <1 0 62 <1 941 1123 1065 1241 | 2 0 60 <1 925 1023 1047 1227 | 5 0 63 <1 836 1098 982 1172 |
| 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 | <1 0 62 <1 941 1123 1065 1241 3057 | 2 0 60 <1 925 1023 1047 1227 2823 | 5 0 63 <1 836 1098 982 1172 2976 |
| 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 | 2 0 50 950 1050 995 1180 2600 | <1 0 62 <1 941 1123 1065 1241 3057 current | 2 0 60 <1 925 1023 1047 1227 2823 history1 | 5 0 63 <1 836 1098 982 1172 2976 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 ASTM D5185m | 2 0 50 950 1050 995 1180 2600 Limit/base | <1 0 62 <1 941 1123 1065 1241 3057 current 4 | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | 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 Limit/base | <1 0 62 <1 941 1123 1065 1241 3057 current 4 < | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >20 | <1 0 62 <1 941 1123 1065 1241 3057 current 4 <1 4 | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 < 2823 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm TS | ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 Imit/base >20 Imit/base >3 | <1 0 62 <1 941 1123 1065 1241 3057 current 4 <1 4 current | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 9 history1 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 0 4 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 >20 limit/base >20 | <1 0 62 <1 941 1123 1065 1241 3057 <i>current</i> 4 <1 4 <i>current</i> | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 9 history1 0.6 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 0 4 bistory2 0.5 |
| 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 0 950 1050 995 1180 2600 imit/base >20 imit/base >20 | <1 0 62 <1 941 1123 1065 1241 3057 <i>current</i> 4 <1 4 <i>current</i> 0.6 11.0 | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 9 history1 0.6 10.9 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 0 4 0 4 0 4 0 5 10.7 |
| 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 D5185m | 2 0 50 0 950 1050 995 1180 2600 imit/base >20 imit/base >3 >20 | <1 0 62 <1 941 1123 1065 1241 3057 <i>current</i> 4 <1 4 <i>current</i> 0.6 11.0 20.1 | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 9 <u>history1</u> 0.6 10.9 19.6 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 0 4 history2 0.5 10.7 19.6 |
| 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 TS ppm ppm ppm ppm ppm | ASTM D5185m ASTM D7844 *ASTM D7624 | 2 0 50 0 950 1050 995 1180 2600 imit/base >20 imit/base >3 >20 >30 >30 | <1 0 62 <1 941 1123 1065 1241 3057 Current 4 <1 4 <1 4 0.6 11.0 20.1 Current | 2 0 60 <1 925 1023 1047 1227 2823 history1 4 <1 9 history1 0.6 10.9 19.6 history1 | 5 0 63 <1 836 1098 982 1172 2976 history2 4 0 4 0 4 0 4 0 5 10.7 19.6 history2 |



OIL ANALYSIS REPORT



| Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, * - Denotes test methods that | | o. : PC/ er : 060 per : 108 | : WearCheck USA - 501 : PCA0117071 : 06086995 : 10874440 : MOB 1 (Additional Tes ; contact Customer Service are outside of the ISO 170 | | | ce at 1-800-237-1369. | | | Contact: MIKE LONGETTE mlongette@millertransgroup.con T | | | | | |
|--|---------|-----------------------------------|---|-----------------|------------------|-----------------------|------------------------|------------------------------|---|-----------|-----------------|--------------|---------------|---|
| | | 10- | Jun22/19 | Jan 23/20 | Nov16/21 | Nov17/22 | Feb3/24 | 4.0 2.0 0.0 8L/FAON | Jun22/19 + | Jan23/20 | Nov16/21 | Nov17/22 | Jul3/23 | Feh3/74 |
| | | (J-001) 12- 753 | Abnormal Base | | | | Base Number (mg KOH/g) | 8.0 - 6.0 - | | | | | \smile | - |
| | | 16 T | Viscosity @ | 0 100°C | 2 | | | Ва ^{10.0} т : | se Numb | er | | | | |
| | | | Nov4/18 | Jan 23/20 | Nov16/21 | Nov17/22 Jul3/23 | Feb3/24 | Nov4/18 | Jun22/19 | Jan23/20 | Nov16/21+ | Nov17/22 + - | Jul3/23 - | Eeh3/24 |
| | | 200 - 50 - 50 - | Abnormal | | | | | 20 - Ab | normal | | | | | |
| | | 250- | Severe | | | | | 40 30 | ere | | | | | |
| | | | Copper (p | | Na | No | LL. | Sil | icon (ppr | | No | No | , | Ľ |
| | | 10 | Nov4/18 | Jan 23/20 + -) | Nov16/21 | Nov17/22 | Feb3/24 | 2 0 81/4/18 | Jun22/19 | Jan23/20 | Nov16/21+ | Nov17/22 | Jul3/23 - | Eah 3/74 |
| | | 40 - 팀 30 - 20 - | Abnormal | | | | - | 8 - Ab | normal | | | | | |
| | | 50- | Severe | | | | | 12 10 Sev | ere | | | | | |
| | | | Aluminum | , | Ň | Nc | Li. | Ch | _∃ romium | , | | Nc | ~ | L |
| | | | Jun22/19 | Jan 23/20 - | Nov16/21 | Vov17/22 | Feb3/24 | 0 Nov4/18 | Jun22/19 | Jan 23/20 | Nov16/21 | Vov17/22 | Jul3/23 | Each 2 /2 d |
| | | ة. 50 - | / | | \sim | ~~~ | | 40 20 | normal | | | | | |
| Nov16/21- | Jul3/23 | 100- | Abnormal | | | | | 60 - Sev | ere | | | | | |
| | | 150 T | Iron (ppm |) | | | | Le: 80 | ad (ppm |) | | | | |
| \checkmark | \sim | | GRAPHS | 5 | | | | | | | | | | |
| | | | isc @ 100° | | cSt | ASTM D445 | | | 0.7 | | 11.1 | | 11.0 | <u>, </u> |
| | | | FLUID P | ROPF | | | limit/bas | | current | | history | 1 | histor | rv2 |
| | | | mulsified W ree Water | /ater | scalar scalar | *Visual *Visual | >0.2 | | ieg Ieg | | NEG NEG | | NEG NEG | |
| Nov16/21 Nov17/22 | Jul 1 | 0 | dor | | scalar | *Visual | NORML | N | IORML | | NORML | | NORM | IL |
| 6/21- | Jul3/23 | | ppearance | | scalar | *Visual | NORML | | IORML | | NORML | | NORM | |
| | | | ebris and/Dirt | | scalar scalar | *Visual *Visual | NONE NONE | | IONE IONE | | NONE NONE | | NONE | |
| | | Si | | | scalar | *Visual | NONE | | IONE | | NONE | | NONE | |
| | | | recipitate | | scalar | *Visual | NONE | | IONE | | NONE | | NONE | |
| | - | | ellow Meta | | scalar | *Visual | NONE | | IONE | | NONE | | NONE | |
| | | W | /hite Metal | | scalar | method *Visual | limit/bas NONE | | current | | history NONE | | histo NONE | |

Contact/Location: MIKE LONGETTE - MILRUT