

OIL ANALYSIS REPORT

Sample Rating Trend



Area FLEET Machine Id 2026875 Component

Main Diesel Engine

PETRO CANADA DURON SHP 10W30 (36 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.

| | | Aug202 | 1 Feb2022 | Aug2022 Se | p2023 | |
|--|--|---|--|--|--|---|
| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Sample Number | | Client Info | | PCA0104897 | PCA0077877 | PCA0066436 |
| Sample Date | | Client Info | | 07 Sep 2023 | 30 Aug 2022 | 25 Feb 2022 |
| Machine Age | mls | Client Info | | 110038 | 110038 | 110038 |
| Oil Age | mls | Client Info | | 110038 | 110038 | 40000 |
| Oil Changed | | Client Info | | N/A | N/A | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINAT | ION | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >100 | 38 | 33 | 43 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | 3 | 6 | 11 |
| Lead | ppm | ASTM D5185m | >40 | 4 | 3 | 4 |
| Copper | ppm | ASTM D5185m | >330 | 11 | 25 | 63 |
| Tin | ppm | | >15 | 1 | 2 | 3 |
| Antimony | ppm | ASTM D5185m | 210 | | | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| | | | | | | |
| | nnm | ACTM DE105m | | 0 | -1 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| ADDITIVES | ppm | ASTM D5185m | limit/base | 0 current | <1 history1 | 0 history2 |
| | ppm ppm | method | limit/base 2 | | | |
| ADDITIVES | | method ASTM D5185m | | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | 2 | current 0 | history1 2 | history2 2 |
| ADDITIVES Boron Barium | ppm ppm | method ASTM D5185m ASTM D5185m | 2 0 50 | current 0 0 | history1 2 0 | history2 2 0 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 | current 0 0 64 | history1 2 0 61 | history2 2 0 60 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 | current 0 0 64 <1 | history1 2 0 61 <1 | history2 2 0 60 1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 | 0 0 64 <1 935 | history1 2 0 61 <1 806 | history2 2 0 60 1 885 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 | Current 0 0 64 <1 935 1212 | history1 2 0 61 <1 806 1088 | history2 2 0 60 1 885 1046 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 0 950 1050 995 | Current 0 0 64 <1 935 1212 911 | history1 2 0 61 <1 806 1088 796 | history2 2 0 60 1 885 1046 876 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 950 1050 995 1180 | Current 0 0 64 <1 935 1212 911 1243 | history1 2 0 61 <1 806 1088 796 1145 | history2 2 0 60 1 885 1046 876 1178 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | Current 0 0 64 <1 935 1212 911 1243 3201 | history1 2 0 61 <1 806 1088 796 1145 2567 | history2 2 0 60 1 885 1046 876 1178 2012 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 | history1 2 0 61 <1 806 1088 796 1145 2567 history1 | history2 2 0 60 1 885 1046 876 1178 2012 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 | Current 0 0 64 <1 935 1212 911 1243 3201 Current | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 limit/base | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >25 -20 limit/base | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 25 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current 0.7 | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 0.9 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 5 history2 7 2 5 history2 0.9 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | 2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 25 history2 |
| ADDITIVES 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 | method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current 0.7 10.7 23.6 | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 0.9 12.1 25.2 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 5 history2 0.9 12.3 25.4 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI | ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm | method ASTM D5185m ASTM D7185M ASTM D7624 *ASTM D7624 *ASTM D7415 | 2 0 0 50 0 950 1050 995 1180 2600 2600 255 20 220 20 3 20 20 3 3 20 3 3 20 3 3 20 3 3 3 20 3 3 3 20 3 3 3 20 3 3 3 3 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current 0.7 10.7 23.6 current | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 0.9 12.1 25.2 history1 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 5 history2 0.9 12.3 25.4 history2 |
| ADDITIVES 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 | method ASTM D5185m | 2 0 50 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20 | current 0 0 64 <1 935 1212 911 1243 3201 current 6 2 7 current 0.7 10.7 23.6 | history1 2 0 61 <1 806 1088 796 1145 2567 history1 8 <1 10 history1 0.9 12.1 25.2 | history2 2 0 60 1 885 1046 876 1178 2012 history2 7 2 5 history2 0.9 12.3 25.4 |



OIL ANALYSIS REPORT

*Visual

*Visual

scalar

scalar

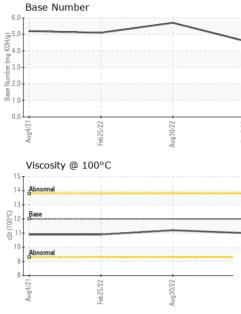
NONE

NONE

VISUAL

White Metal

Yellow Metal



| | | Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
|---|-----------------------|------------------------------|--------|-----------|------------------------|--|-------------|----------|
| | 1 | Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| ç | /22 - | | scalar | *Visual | NORML | NORML | NORML | NORML |
| 6 | Aug30/22 . Sep7/23 | Odor | | *Visual | NORML | NORML | NORML | NORML |
| | 4 | Ouoi | scalar | | | | | |
| | | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| | | Free Water | scalar | *Visual | | NEG | NEG | NEG |
| | | FLUID PROP | ERTIES | method | limit/base | e current | history1 | history2 |
| | | Visc @ 100°C | cSt | ASTM D445 | 12.00 | 11.0 | 11.2 | 10.9 |
| | | GRAPHS | | | | | | |
| | | Ferrous Alloys | | | | | | |
| | | iron | | | | | | |
| | Aug30/22 | 40 - nickel | | | | | | |
| | | _ 30 - | | | | | | |
| | | 튭. 20 | | | | | | |
| | | | | | | | | |
| | | 10- | | | | | | |
| | | 5 51 0 | M | | | | | |
| | | Aug4/21 | | Aug30/22 | Sep7/23 | | | |
| | | Non-ferrous Met | als | Aı | | | | |
| | | ¹²⁰ | u13 | | | | | |
| | | 100 - copper | | | | | | |
| | | mannana tin | | | | | | |
| | | 80 | | | | | | |
| | | Mag 60 | | | | | | |
| | | 40 - | | | | | | |
| | | 20 - | | | | | | |
| | | 0 | ****** | | | | | |
| | | Aug4/21 | | Aug30/22 | Sep 7/23 | | | |
| | | Au eb2 | | Aug | Se | | | |
| | | | - | | | | | |
| | | Viscosity @ 100 ^c | C | | | Base Number | | |
| | | Viscosity @ 100 ^c | °C | 1 | | 6.0 | | |
| | | Viscosity @ 100° | °C | | | 5.0 | | |
| | | Viscosity @ 100° | °C | | | 5.0 | | <u> </u> |
| | | Viscosity @ 100° | °C | | | 5.0 | | |
| | | Viscosity @ 1000 | °C | | | 5.0 | | |
| | | Viscosity @ 100° | °C | | Base Number (mg KOH/g) | 6.0 5.0 4.0 3.0 2.0 | | |
| | | Viscosity @ 100° | °C | | Base Number (mg KOH(g) | 6.0 5.0 4.0 3.0 2.0 1.0 | | |
| | | Viscosity @ 100° | °C | Aug30/22 | Base Number (mg KOH(g) | 6.0 5.0 4.0 3.0 2.0 0.0 | Feb:25/22 + | |

NONE

NONE

NONE

NONE

NONE

NONE