

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 413023 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

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

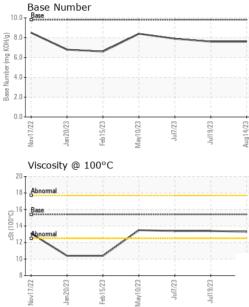
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORM | | methoa | iimit/base | current | riistory i | nistory∠ |
|--|--|--|--|---|---|---|
| Sample Number | | Client Info | | GFL0067685 | GFL0088165 | GFL0067730 |
| Sample Date | | Client Info | | 14 Aug 2023 | 19 Jul 2023 | 07 Jul 2023 |
| Machine Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATI | ON | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METALS | 5 | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >120 | 21 | 14 | 12 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | <1 | <1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | <1 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 5 | 2 | 3 |
| Lead | ppm | ASTM D5185m | >40 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 9 | 9 | 9 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | 0 | 2 | 0 | <1 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | 76 | 57 | 58 |
| Manganese | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | 1171 | 949 | 870 |
| Calcium | ppm | ASTM D5185m | 1070 | 1291 | 1054 | 1002 |
| Phosphorus | ppm | ASTM D5185m | 1150 | 1209 | 959 | 965 |
| Zinc | ppm | ASTM D5185m | 1270 | 1649 | 1207 | 1140 |
| Sulfur | | | | | | |
| CONTAMINAN | ppm | ASTM D5185m | 2060 | 4488 | 3118 | 2815 |
| | • • | method | limit/base | current | history1 | history2 |
| Silicon | • • | method ASTM D5185m | limit/base | current 6 | history1 5 | history2 5 |
| Sodium | TS | method ASTM D5185m ASTM D5185m | limit/base >25 | current | history1 | history2 |
| | TS ppm | method ASTM D5185m | limit/base >25 | current 6 | history1 5 | history2 5 |
| Sodium Potassium INFRA-RED | TS ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m method | limit/base >25 >20 limit/base | current 6 <1 4 current | history1 5 4 6 history1 | history2 5 0 4 history2 |
| Sodium Potassium INFRA-RED Soot % | TS ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m method | limit/base >25 >20 limit/base >4 | current 6 <1 4 current 0.4 | history1 5 4 6 history1 0.4 | history2 5 0 4 history2 0.4 |
| Sodium Potassium INFRA-RED Soot % Nitration | TS ppm ppm ppm % Abs/cm | method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 | limit/base >25 >20 limit/base >4 >20 | current 6 <1 4 current 0.4 8.1 | history1 5 4 6 history1 0.4 7.0 | history2 5 0 4 history2 0.4 7.3 |
| Sodium Potassium INFRA-RED Soot % Nitration Sulfation | rS ppm ppm ppm % Abs/cm Abs/.1mm | method ASTM D5185m ASTM D5185m ASTM D5185m method | limit/base >25 >20 limit/base >4 | current 6 <1 4 current 0.4 | history1 5 4 6 history1 0.4 | history2 5 0 4 history2 0.4 |
| Sodium Potassium INFRA-RED Soot % Nitration | rS ppm ppm ppm % Abs/cm Abs/.1mm | method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 | limit/base >25 >20 limit/base >4 >20 | current 6 <1 4 current 0.4 8.1 | history1 5 4 6 history1 0.4 7.0 | history2 5 0 4 history2 0.4 7.3 |
| Sodium Potassium INFRA-RED Soot % Nitration Sulfation | rS ppm ppm ppm % Abs/cm Abs/.1mm | method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 | limit/base >25 >20 limit/base >4 >20 >30 | current 6 <1 4 current 0.4 8.1 19.8 | history1 5 4 6 history1 0.4 7.0 18.4 | history2 5 0 4 history2 0.4 7.3 19.9 |



OIL ANALYSIS REPORT

VISUAL



| | | 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 |
| /23 | 723 - | | scalar | *Visual | NORML | NORML | NORML | NORML |
| May10/23 | Jul19/23 | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| | | Free Water | scalar | *Visual | 20.L | NEG | NEG | NEG |
| | | | | | | | | |
| | | FLUID PROPE | | method | limit/base | current | history1 | history2 |
| | | Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.3 | 13.4 | 13.4 |
| | | GRAPHS | | | | | | |
| | | Ferrous Alloys | | | | | | |
| 23 | 23 | iron | | | | | | |
| May10/23 | Jul19/23 | 50 - nickel | | | | | | |
| 2 | | 40 | | | | | | |
| | | Ē 30- | | | | | | |
| | | 20- | | | | | | |
| | | | | | | | | |
| | | 10- | | | | | | |
| | | 2 2 2 2 | C. | 53 53 | 33 | | | |
| | | Nov17/22 Jan20/23 Feb15/23 | May10/23 | Jul7/23 Jul19/23 | Aug 14/23 | | | |
| | | _ | | · | Au | | | |
| | | Non-ferrous Meta | IS | | | | | |
| | | copper | | | | | | |
| | | 250 - Research lead | | | | | | |
| | | 200 | | | | | | |
| | | ₹150- | | | | | | |
| | | 100 | \mathbf{N} | | | | | |
| | | | | | | | | |
| | | 50- | | | | | | |
| | | | 57 | | 57 | | | |
| | | Nov17/22 Jan 20/23 Feb 15/23 | May10/23 | Jul7/23 Jul19/23 | Aug14/23 | | | |
| | | | | · | Au | | | |
| | | Viscosity @ 100° | | | | Base Number | | |
| | | 18 - Abnormal | | | 10 | 0 Base | | |
| | | 17- | | | - 8 | 0 | | |
| | | 16 Base | | | KOH/(| | | |
| | | 0000 | | | B G | .0 - | | |
| | | = 14+ | | | | | | |
| | | に15 | - | | | .0 | | |
| | | 12 | \square | | qunny ase | | | |
| | | 12 | \square | | 6 (D) 6 (D) (OH) 8 gase Number (mg 2 gase 2 gase 1 | | | |
| | | | | | 0 | 0 | | |
| | | | 0/23 | 17/23 | 0 | 0 | 19/23 | 9/23 |
| | | 12 11 10 | May10/23 | | 2 | 0 | Heb 15/23 May10/23 | Jul19/23 + |
| | | Jan 20/2/3 | _ | ~ | Aug14/23 | Nov17/22 | | r v |
| d | Laboratory | : WearCheck USA - | 501 Madis | son Ave., Ca | ry, NC 2751 | Nov17/22 | ironmental - 820 | - Joplin Hauling |
| | Sample No. | : WearCheck USA - : GFL0067685 | 501 Madia | son Ave., Ca 1 : 21 / | ry, NC 2751 Aug 2023 | Nov17/22 | ironmental - 820 | - Joplin Hauling West 7th Stree |
| | Sample No. Lab Number | : WearCheck USA - : GFL0067685 : 05929286 | 501 Madis Received Diagnose | son Ave., Ca 1 : 21 / ed : 21 / | ry, NC 2751 Aug 2023 Aug 2023 | Nov17/22 | ironmental - 820 | - Joplin Hauling West 7th Stree Joplin, MC |
| VESTING LABORATION TESTING LABORATION Certificate L2367 | Sample No. | : WearCheck USA - : GFL0067685 : 05929286 r : 10609233 | 501 Madia | son Ave., Ca 1 : 21 / ed : 21 / | ry, NC 2751 Aug 2023 | Nov17/22 | ironmental - 820 3700 v | r v |
| o discuss this | Sample No. Lab Number Unique Numbe Test Package s sample report | : WearCheck USA - : GFL0067685 : 05929286 r : 10609233 | 501 Madia Received Diagnose Diagnost | son Ave., Ca d : 21 / ed : 21 / tician : We | ry, NC 2751 Aug 2023 Aug 2023 s Davis | Nov17/22 | ironmental - 820 3700 \ Contact | - Joplin Hauling West 7th Stree Joplin, MC US 6480 ⁻ |

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