

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid PETRO CANADA DURON SHP 10W30 (--- QTS)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

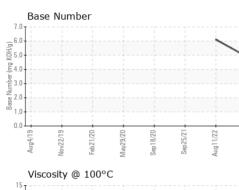
Fluid Condition

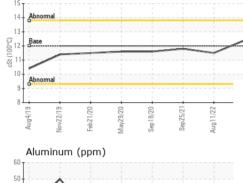
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

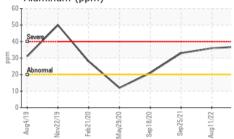
| QTS) | | Aug2019 | lov2019 Feb2020 May20 | 20 Sep2020 Sep2021 Aug2022 | Aug2023 | |
|------------------|----------|-------------|-----------------------|----------------------------|-------------|-------------|
| SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Sample Number | | Client Info | | PCA0097328 | PCA0071686 | PCA0041987 |
| Sample Date | | Client Info | | 06 Aug 2023 | 11 Aug 2022 | 25 Sep 2021 |
| Machine Age | mls | Client Info | | 252190 | 188166 | 132589 |
| Oil Age | mls | Client Info | | 64024 | 55577 | 52064 |
| Oil Changed | | Client Info | | Changed | 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 |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >100 | 70 | 53 | 37 |
| Chromium | ppm | ASTM D5185m | >20 | 4 | 5 | 5 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | 1 | <1 |
| Titanium | ppm | ASTM D5185m | | 55 | 1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | 37 | 36 | 33 |
| Lead | ppm | ASTM D5185m | >40 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 12 | 16 | 44 |
| Tin | ppm | ASTM D5185m | >15 | <1 | 2 | 2 |
| Antimony | ppm | ASTM D5185m | | | | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 2 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | 2 | 8 | 2 | 4 |
| Barium | ppm | ASTM D5185m | 0 | <1 | <1 | 0 |
| Molybdenum | ppm | ASTM D5185m | 50 | 31 | 58 | 65 |
| Manganese | ppm | ASTM D5185m | | <1 | 2 | 1 |
| Magnesium | ppm | ASTM D5185m | 950 | 631 | 920 | 980 |
| Calcium | ppm | ASTM D5185m | 1050 | 1539 | 1101 | 1205 |
| Phosphorus | ppm | ASTM D5185m | 995 | 948 | 892 | 961 |
| Zinc | ppm | ASTM D5185m | 1180 | 1265 | 1172 | 1309 |
| Sulfur | ppm | ASTM D5185m | 2600 | 3476 | 2683 | 2348 |
| CONTAMINAN | NTS | method | limit/base | current | history1 | history2 |
| Silicon | ppm | ASTM D5185m | >25 | 8 | 8 | 6 |
| Sodium | ppm | ASTM D5185m | | 4 | 5 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | 32 | 37 | 55 |
| INFRA-RED | | method | limit/base | current | history1 | history2 |
| Soot % | % | *ASTM D7844 | >3 | 2.1 | 1.8 | 1.2 |
| Nitration | Abs/cm | *ASTM D7624 | | 12.8 | 12.5 | 10 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 29.9 | 27.1 | 22.6 |
| FLUID DEGRA | DATION | method | limit/base | current | history1 | history2 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 22.3 | 19.7 | 17 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 4.9 | 6.1 | |
| | | | | | | |



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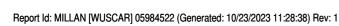




| | VISUAL | | method | limit/base | current | history1 | history2 | | | |
|---|---|----------------------|--------------------------|---|---------------------------------------|----------------------------------|--|--|--|--|
| | White Metal | scalar | *Visual | NONE | NONE | NONE | NONE | | | |
| | Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE | | | |
| | Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE | | | |
| | Silt | scalar | *Visual | NONE | NONE | NONE | NONE | | | |
| | | | *Visual | NONE | NONE | NONE | NONE | | | |
| | Debris | | | | | | | | | |
| 22 - 22 - 23 - 23 - 23 - 23 - 23 - 23 - | Sand/Dirt | scalar scalar | *Visual | NONE | NONE | NONE | NONE | | | |
| Sep25/21 Aug11/22 Aug6/23 | Appearance | | *Visual | NORML | NORML | NORML | NORML | | | |
| S Au | 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 | 12.4 | 11.5 | 11.8 | | | |
| | GRAPHS | | | | | | | | | |
| | Iron (ppm) Lead (ppm) | | | | | | | | | |
| 21 | 200 Severe | 1 | | 80 | Severe | | | | | |
| Sep25/21. Aug11/22 | 100 | | | 0.0 | | | | | | |
| Se Au Dom | 100 - Abnormal | | | E 40 | Abnormal | | | | | |
| | 50 - | | | 20 | T I | | | | | |
| | 0 | | | 0 | | | | | | |
| | |)/20 - 3/20 - | 5/21- | 3/23 | | 3/20 - | 5/21. | | | |
| | Aug4/19 Nov22/19 Feb21/20 | May29/20 Sep18/20 | Sep 25/21. Aug 11/22. | Aug6/23 - | Aug4/19 . Vov22/19 . | May29/20 - Sep18/20 - | Sep 25/21. Aug 11/22 Aug 6/23 | | | |
| | Aluminum (ppm) | 2 07 | 4 | | Chromium (p | | 4 | | | |
| | ⁶⁰ T | | | 50 | | | | | | |
| | 50 | | | 40 | Severe | | | | | |
| | 40 - Severe | | | | | | | | | |
| Sep25/21. Aug11/22 | 30 20 Abnormal | | | § | Abnormal | | | | | |
| Sep. | 20 0 | | | 10 | | | | | | |
| | 0 | | | | | | | | | |
| | Aug4/19 - Nov22/19 - Feb21/20 - | May29/20 Sep18/20 | Sep 25/21. Aug 11/22. | Aug6/23 - | Aug4/19 Vov22/19 | May29/20 - Sep18/20 - | Sep 25/21. Aug 11/22 Aug 6/23 | | | |
| | Aun | Sep | Sep | Au | Au | May | Sep | | | |
| | Copper (ppm) | | | 80 | Silicon (ppm) | | | | | |
| | | | | | | | | | | |
| | 600 | | | 60 | | | | | | |
| E C C C C C C C C C C C C C C C C C C C | 400 - SEVEREMAL | | | 톱 40 | | | | | | |
| | 200 | | | 20 | Abnormal | | | | | |
| | | | | | | | | | | |
| | | 3/20 - 3/20 - | 5/21- | Aug6/23 | | 3/20 - | Sep 25/21 - \ug 11/22 - Aug 6/23 - | | | |
| | Aug4/19 Nov22/19 Feb21/20 | May29/20 Sep18/20 | Sep 25/21 Aug 11/22 | Aug | Aug4/19 Nov22/19 Feb21/20 | May29/20 Sep18/20 | Sep25/21 Aug11/22 - Aug6/23 - | | | |
| | Viscosity @ 100°C | | | | Base Number | | | | | |
| | 16 T | | | 8.0 | T | | | | | |
| - | 14 Abnormal | | | | | | | | | |
| 0 | Base | | | <u>ال</u> 4.0 | | | | | | |
| č | | | | quin | | | | | | |
| | 10 Abnormal | | | (D/H0, G.0. Base Number Number Base Base S | | | | | | |
| | 8 6 6 0 | | 21 | | · | | 2 | | | |
| | Aug4/19 Nov22/19 Feb21/20 | May29/20 Sep18/20 | Sep 25/21 | Aug6/23 - | Aug4/19 - Nov22/19 - Feb21/20 - | May29/20 Sep18/20 | Sep25/21. Aug11/22 . Aug6/23 . | | | |
| | A No Fei | Se | Se | A | A No Fel | Na Se | Au Si Ai | | | |
| Laboratory | : WearCheck USA - | | | 3 M | | LEASING #123 | | | | |
| Sample No. | . : PCA0097328 Received : 20 Oct 2023 66 KELLEF | | | | | | | | | |
| Lab Number | · · · · · · · · · · · · · · · · · · · | | | | | | | | | |
| Unique Number Test Package | : 10701817 : MOB 1 (Additional | | ostician : Sean Felton | | | US 17601 Contact: RON ROBERTS | | | | |
| rest rackage | . IVIOD I (AUUILIONAL | TESIS. TE |) (MIC | | | Contact: | | | | |

Test Package : MOB 1 (Additional Tests: TBN) Certificate L2367 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)

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