

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



164M Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

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 Sample Number Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATI | hrs | method Client Info Client Info | limit/base | current GFL0108762 | history1 GFL0105641 | history2 GFL0089090 |
|--|----------|--------------------------------------|------------|-----------------------|------------------------|------------------------|
| Sample Date Machine Age Oil Age Oil Changed Sample Status | | | | GEI 0108762 | GFL0105641 | GEL 0089090 |
| Machine Age Oil Age Oil Changed Sample Status | | Client Info | | | | GI 20000000 |
| Oil Age Oil Changed Sample Status | | | | 20 Mar 2024 | 14 Dec 2023 | 22 Nov 2023 |
| Oil Changed Sample Status | | Client Info | | 18927 | 18236 | 18235 |
| Sample Status | hrs | Client Info | | 0 | 21146 | 0 |
| · | | Client Info | | Not Changd | Not Changd | Not Changd |
| CONTAMINATI | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATI | ON | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METALS | S | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >200 | 15 | 7 | 13 |
| Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | <1 | 1 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >30 | 2 | 3 | 5 |
| Lead | ppm | ASTM D5185m | >30 | <1 | 0 | <1 |
| Copper | ppm | ASTM D5185m | >30 | 4 | 1 | 1 |
| Tin | ppm | ASTM D5185m | >15 | <1 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | 0 | <1 | 1 | 16 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | 65 | 52 | 48 |
| Manganese | ppm | ASTM D5185m | 0 | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | 997 | 905 | 827 |
| Calcium | ppm | ASTM D5185m | 1070 | 1145 | 998 | 1119 |
| Phosphorus | ppm | ASTM D5185m | 1150 | 1032 | 994 | 1086 |
| Zinc | ppm | ASTM D5185m | 1270 | 1304 | 1240 | 1231 |
| Sulfur | ppm | ASTM D5185m | 2060 | 2869 | 3110 | 3134 |
| CONTAMINAN | TS | method | limit/base | current | history1 | history2 |
| Silicon | ppm | ASTM D5185m | >30 | 5 | 5 | 4 |
| Sodium | ppm | ASTM D5185m | | 6 | 2 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | 2 | 2 | 3 |
| INFRA-RED | | method | limit/base | current | history1 | history2 |
| Soot % | % | *ASTM D7844 | >3 | 0.2 | 0.2 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.8 | 5.2 | 6.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 19.7 | 17.9 | 19.4 |
| FLUID DEGRAD | ATION | method | limit/base | current | history1 | history2 |
| | Abs/.1mm | *ASTM D7414 | >25 | 16.1 | 13.3 | 14.8 |
| Oxidation | | | | | | |



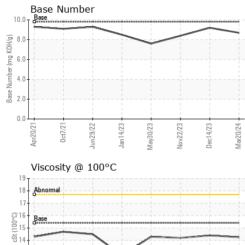
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Apr20/21

0ct7/21

Jun29/22

OIL ANALYSIS REPORT



| Deci4/23 - Deci4/23 - Deci4/23 - Deci4/24 - Mar20/24 - | White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar | *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual method ASTM D445 | NONE NONE NONE NONE NORML NORML >0.2 Iimit/base | NONE NONE NONE NONE NORML NORML NEG NEG Current | NONE NONE NONE NONE NONE NORML NORML NEG NEG history1 14.4 | NONE NONE NONE NONE NORE NORML NORML NEG NEG history2 |
|---|--|--|---|---|--|--|---|
| | Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar scalar scalar scalar scalar | *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual method | NONE NONE NONE NORML NORML >0.2 | NONE NONE NONE NORML NORML NEG NEG | NONE NONE NONE NORML NORML NEG NEG history1 | NONE NONE NONE NORML NORML NEG NEG history2 |
| | Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar scalar scalar scalar | *Visual *Visual *Visual *Visual *Visual *Visual * Visual method | NONE NONE NORML NORML >0.2 | NONE NONE NORML NORML NEG NEG | NONE NONE NORML NORML NEG NEG history1 | NONE NONE NORML NORML NEG NEG history2 |
| | Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar scalar scalar RTIES | *Visual *Visual *Visual *Visual *Visual *Visual method | NONE NORML NORML >0.2 limit/base | NONE NORML NORML NEG NEG | NONE NORML NORML NEG NEG history1 | NONE NORML NORML NEG NEG history2 |
| | Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar scalar RTIES | *Visual *Visual *Visual *Visual *Visual method | NONE NORML NORML >0.2 | NONE NORML NORML NEG NEG | NONE NORML NORML NEG NEG history1 | NONE NORML NORML NEG NEG history2 |
| | Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar scalar RTIES | *Visual *Visual *Visual *Visual method | NORML >0.2 limit/base | NORML NORML NEG NEG current | NORML NORML NEG NEG history1 | NORML NORML NEG NEG history2 |
| | Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar scalar RTIES | *Visual *Visual *Visual method | NORML >0.2 limit/base | NORML NEG NEG current | NORML NEG NEG history1 | NORML NEG NEG history2 |
| | Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar scalar RTIES | *Visual *Visual method | >0.2 limit/base | NEG NEG current | NEG NEG history1 | NEG NEG history2 |
| Dec14/23 - | Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | scalar RTIES | *Visual method | limit/base | NEG current | NEG history1 | NEG history2 |
| Dec14/23 | FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys | RTIES | method | | current | history1 | history2 |
| Dec14/23 | Visc @ 100°C GRAPHS Ferrous Alloys | | | | | | |
| Deci 4/23 | GRAPHS Ferrous Alloys | | AOTIM D443 | 13.4 | 14.20 | 1 7.7 | 14.2 |
| Dec14/23 | Ferrous Alloys | | | | | | 14.2 |
| Dec14/23 | 30 iron | | | | | | |
| | Non-ferrous Metals | s | Nov2223 11 Nov2223 12 Deci 4/23 Deci 4/23 | Maz024 Maz024 | | | |
| | | | | | Base Number | | |
| | 18 - Abnormal | | | 10.0 | Base | | |
| | 17 | | | ···· | | \searrow | |
| | © ¹⁶ Base | | | B KOH | | | |
| | 815 | | | je j | | | |
| | | 1 | | 4.0- | | | |
| | 13 Abnormal | | | 2.0· | | | |
| | 12 | | | | | | |
| | 7/21+ | /23 | 2/23 - | | 0/21 7/21 /22 | 4/23 - | 1/23 + 1/23 + 1/24 + |
| | Apr2l Octi | Jan 14 Vlay30 | Nov22 Dec14 | Mar20 | Apr2l Octi Jun29, | Jan14 Vlay30 | Nov22/23 Dec14/23 Mar20/24 |
| nique Number est Package | : GFL0108762 : 06126186 : 10940337 : FLEET | Receiv Testeo Diagn | ved : 22 d : 28 losed : 28 | 2 Mar 2024 3 Mar 2024 Mar 2024 - Don | | Ster | - Michigan East 6200 Elmridge ling Heights, MI US 48313 ct: Frank Wolak ak@gflenv.com |
| | ample No. ab Number hique Number est Package ample report, hethods that a | Aboratory : WearCheck USA - 50° ample No. : GFL0108762 ab Number : 10940337 est Package : FLEET mple report, contact Customer Service thethods that are outside of the ISO 17 | Aboratory : WearCheck USA - 501 Madiso ample No. : GFL0108762 Recei ab Number : 10940337 Diagn est Package : FLEET mple report, contact Customer Service at 1-8 bethods that are outside of the ISO 17025 sco | Non-ferrous Metals Non-ferrous Metals Non-ferrous Metals Viscosity @ 100°C Viscosity | Aboratory :: WearCheck USA - 501 Madison Ave., Cary, NC 27513 ample No.: GFL0108762 :: Received :: 22 Mar 2024 blumber :: 10940337 :: Carter Service at 1-800-237-1369. tethods that are outside of the ISO 17025 scope of accreditation. | Non-ferrous Metals Non-ferrous Metals Uscosity @ 100°C Uscosity | boratory : WearCheck USA - 501 Malison Ave., Cary, NC 2751 WearCheck USA - 501 Malison Ave., Cary, NC 2751 Biometer : 10940337 timeter report, contact Customer Service at 1-600-237-1365. |

Submitted By: Frank Wolak

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