

## **OIL ANALYSIS REPORT**

Sample Rating Trend





### Diesel Engine

Fluid PETRO CANADA DURON UHP 5W30 (--- 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.

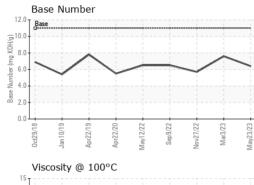
### Fluid Condition

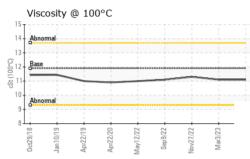
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

|                  |                | Oct2018 Jan | 2019 Apr2019 Apr2020 | May2022 Sep2022 Nov2022 Mar203 | 23 May2023  |             |
|------------------|----------------|-------------|----------------------|--------------------------------|-------------|-------------|
| SAMPLE INFORM    | MATION         | method      | limit/base           | current                        | history1    | history2    |
| Sample Number    |                | Client Info |                      | PCA0099462                     | PCA0094439  | PCA0087568  |
| Sample Date      |                | Client Info |                      | 23 May 2023                    | 03 Mar 2023 | 27 Nov 2022 |
| Machine Age      | mls            | Client Info |                      | 382684                         | 360073      | 339824      |
| Oil Age          | mls            | Client Info |                      | 42860                          | 0           | 42300       |
| Oil Changed      |                | Client Info |                      | Changed                        | N/A         | Changed     |
| Sample Status    |                |             |                      | NORMAL                         | NORMAL      | NORMAL      |
| CONTAMINAT       | ION            | method      | limit/base           | current                        | history1    | history2    |
| Fuel             |                | WC Method   | >6.0                 | <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 | >100                 | 10                             | 15          | 33          |
| Chromium         | ppm            | ASTM D5185m | >20                  | <1                             | 0           | <1          |
| Nickel           | ppm            | ASTM D5185m | >2                   | 0                              | 0           | 0           |
| Titanium         | ppm            | ASTM D5185m |                      | 2                              | 10          | 35          |
| Silver           | ppm            | ASTM D5185m | >2                   | 0                              | 0           | 0           |
| Aluminum         | ppm            | ASTM D5185m | >25                  | 2                              | 2           | 4           |
| Lead             | ppm            | ASTM D5185m | >40                  | 2                              | 0           | 3           |
| Copper           | ppm            | ASTM D5185m | >330                 | 2                              | 2           | 5           |
| Tin              | ppm            |             | >15                  | 0                              | 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                             | 5           | 0           |
| Barium           | ppm            | ASTM D5185m | 0                    | 0                              | 0           | 0           |
| Molybdenum       | ppm            | ASTM D5185m | 64                   | 57                             | 49          | 43          |
| Manganese        | ppm            | ASTM D5185m | 0                    | <1                             | <1          | <1          |
| Magnesium        | ppm            | ASTM D5185m | 1160                 | 946                            | 835         | 734         |
| Calcium          | ppm            | ASTM D5185m | 820                  | 1126                           | 1238        | 1446        |
| Phosphorus       | ppm            | ASTM D5185m | 1160                 | 877                            | 951         | 952         |
| Zinc             | ppm            | ASTM D5185m | 1260                 | 1292                           | 1225        | 1202        |
| Sulfur           | ppm            | ASTM D5185m | 3000                 | 3566                           | 3239        | 3514        |
| CONTAMINAN       | TS             | method      | limit/base           | current                        | history1    | history2    |
| Silicon          | ppm            | ASTM D5185m | >25                  | 3                              | 3           | 6           |
| Sodium           | ppm            | ASTM D5185m |                      | 7                              | 7           | 21          |
| Potassium        | ppm            | ASTM D5185m | >20                  | 2                              | 1           | 1           |
| INFRA-RED        |                | method      | limit/base           | current                        | history1    | history2    |
| Soot %           | %              | *ASTM D7844 | >3                   | 0.3                            | 0.4         | 0.7         |
| Nitration        | Abs/cm         | *ASTM D7624 | >20                  | 8.9                            | 8.9         | 10.4        |
| Sulfation        | Abs/.1mm       | *ASTM D7415 | >30                  | 19.4                           | 19.8        | 24.3        |
| FLUID DEGRA      | DAT <u>ION</u> | method      | limit/base           | current                        | history1    | history2    |
| Oxidation        | Abs/.1mm       | *ASTM D7414 | >25                  | 16.0                           | 16.0        | 19.2        |
|                  |                |             | ~                    | 10.0                           | 10.0        | 10.4        |
| Base Number (BN) | mg KOH/g       | ASTM D2896  | 11.0                 | 6.4                            | 7.6         | 5.7         |

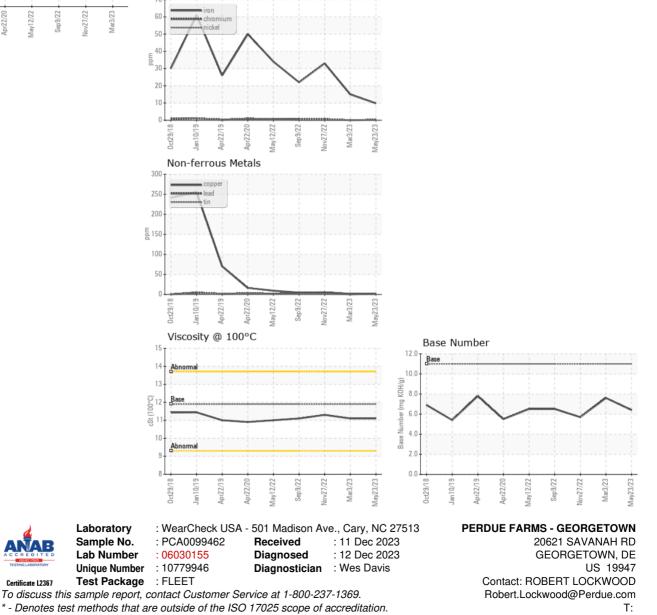


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| VISUAL           |        | method    | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Precipitate      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Silt             | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Debris           | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Sand/Dirt        | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Appearance       | scalar | *Visual   | NORML      | NORML   | NORML    | NORML    |
| 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 | 11.9       | 11.1    | 11.1     | 11.3     |
| GRAPHS           |        |           |            |         |          |          |
| Ferrous Alloys   |        |           |            |         |          |          |



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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