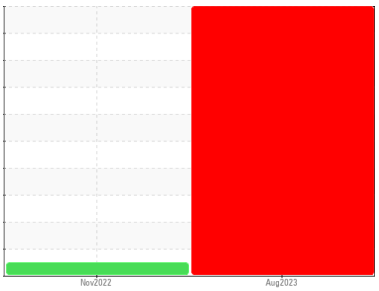
OIL DIAGNOSTICS

# PROBLEM SUMMARY

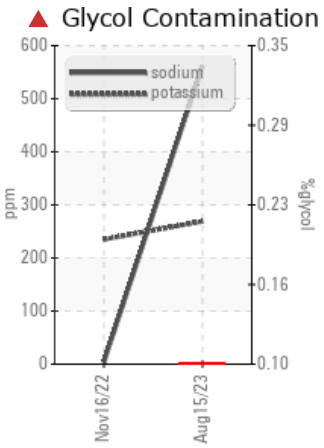
Sample Rating Trend

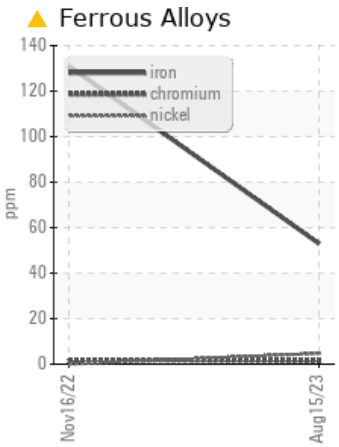


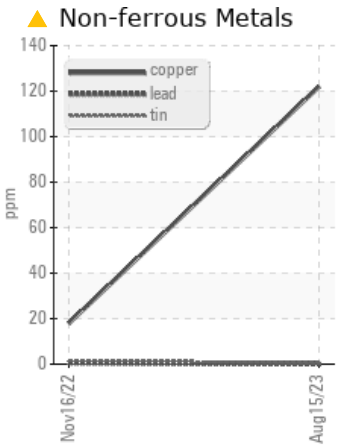

**GLYCOL**

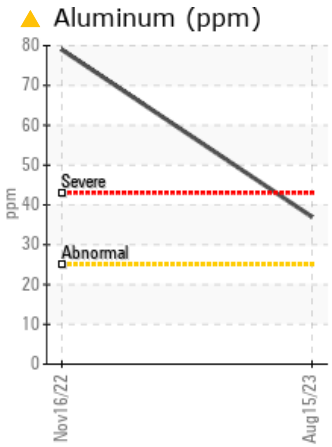
Machine Id
**DT804**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- QTS)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | NORMAL | --- |
|---|---|---|---|---|---|---|
| Nickel | ppm | ASTM D5185m | >2 | ▲ **5** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >25 | ▲ **37** | 79 | --- |
| Copper | ppm | ASTM D5185m | >85 | ▲ **122** | 18 | --- |
| Sodium | ppm | ASTM D5185m | | ▲ **561** | 4 | --- |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **269** | 235 | --- |
| Glycol | % | *ASTM D2982 | | ▲ **0.10** | NEG | --- |

**Customer Id:** NWWDUN
**Sample No.:** PCA0089159
**Lab Number:** 06104806
**Test Package:** FLEET

*To manage this report scan the QR code*

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Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Glycol Access | --- | --- | ? | We advise that you check for the source of the coolant leak. |

## HISTORICAL DIAGNOSIS

**16 Nov 2022 Diag: Don Baldridge**

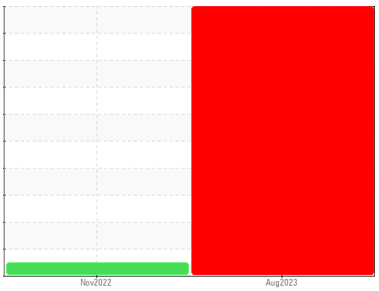
NORMAL

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. 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. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

**view report**

# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
## DT804
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- QTS)**

## DIAGNOSIS

**Recommendation**
We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

**Wear**
The aluminum level is abnormal. The copper level is abnormal. Valve wear is indicated. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

**Contamination**
Sodium and/or potassium levels are high. Test for glycol is positive.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0089159** | PCA0080483 | --- |
| Sample Date | | Client Info | | **15 Aug 2023** | 16 Nov 2022 | --- |
| Machine Age | mls | Client Info | | **79620** | 53294 | --- |
| Oil Age | mls | Client Info | | **26326** | 53294 | --- |
| Oil Changed | | Client Info | | **Changed** | Changed | --- |
| Sample Status | | | | **SEVERE** | NORMAL | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | --- |
| Water | | WC Method | >0.2 | **NEG** | NEG | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >110 | **53** | 131 | --- |
| Chromium | ppm | ASTM D5185m | >4 | **1** | 2 | --- |
| Nickel | ppm | ASTM D5185m | >2 | ▲ **5** | 0 | --- |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | --- |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >25 | ▲ **37** | 79 | --- |
| Lead | ppm | ASTM D5185m | >45 | **0** | <1 | --- |
| Copper | ppm | ASTM D5185m | >85 | ▲ **122** | 18 | --- |
| Tin | ppm | ASTM D5185m | >4 | **<1** | 2 | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **1** | 12 | --- |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | 50 | **135** | 24 | --- |
| Manganese | ppm | ASTM D5185m | 0 | **3** | 3 | --- |
| Magnesium | ppm | ASTM D5185m | 950 | **943** | 800 | --- |
| Calcium | ppm | ASTM D5185m | 1050 | **1115** | 1379 | --- |
| Phosphorus | ppm | ASTM D5185m | 995 | **896** | 855 | --- |
| Zinc | ppm | ASTM D5185m | 1180 | **1231** | 1031 | --- |
| Sulfur | ppm | ASTM D5185m | 2600 | **2649** | 3256 | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | **10** | 15 | --- |
| Sodium | ppm | ASTM D5185m | | ▲ **561** | 4 | --- |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **269** | 235 | --- |
| Glycol | % | *ASTM D2982 | | ▲ **0.10** | NEG | --- |

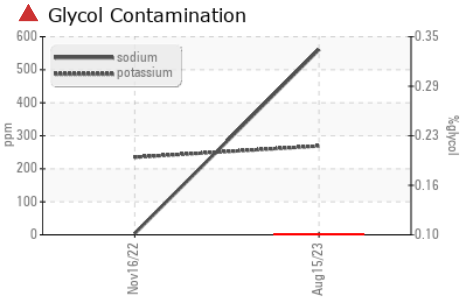
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 1.2 | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **12.0** | 14.8 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.0** | 31.4 | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **19.1** | 29.2 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **6.0** | 4.3 | --- |

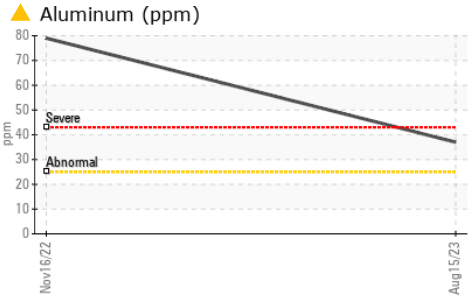
# OIL ANALYSIS REPORT

OIL DIAGNOSTICS

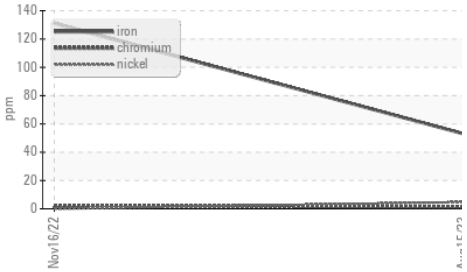
Glycol Contamination



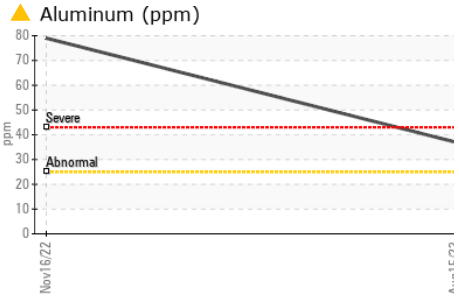

Aluminum (ppm)



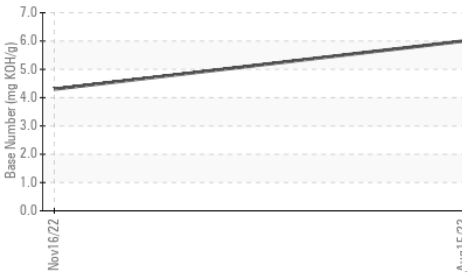

Ferrous Alloys




Aluminum (ppm)




Base Number

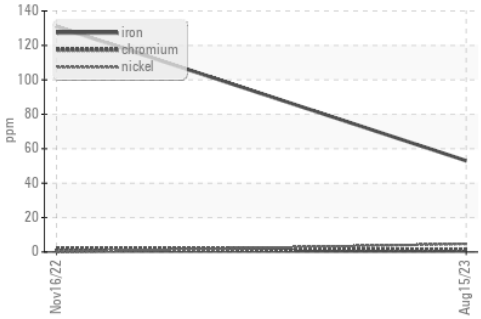



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.2 | **NEG** | NEG | --- |
| Free Water | scalar | *Visual | | **NEG** | NEG | --- |

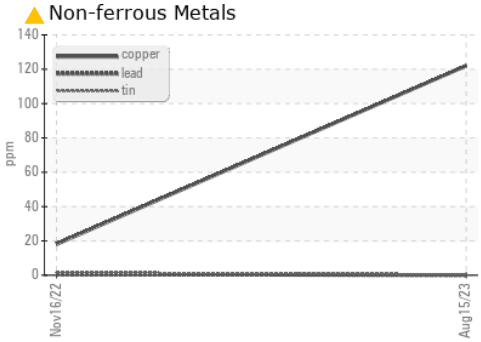
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **11.4** | 12.2 | --- |

## GRAPHS

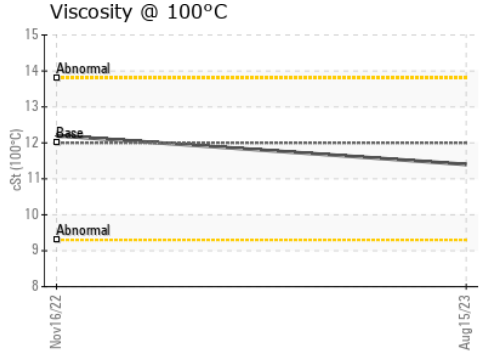
Ferrous Alloys



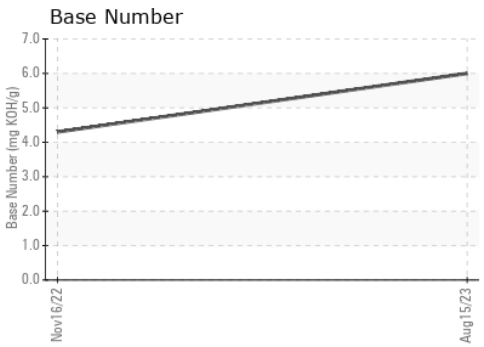

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0089159
**Lab Number** : 06104806
**Unique Number** : 10903036
**Test Package** : FLEET ( Additional Tests: Glycol )

**Received** : 29 Feb 2024
**Tested** : 05 Mar 2024
**Diagnosed** : 05 Mar 2024 - Jonathan Hester

*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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