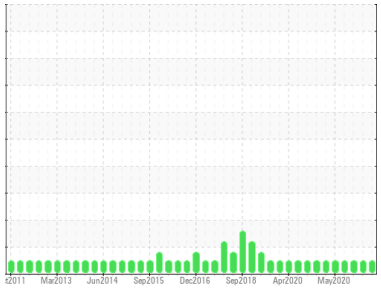
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
## Fwd Machinery Space [450204382]
Machine Id
## Pump Fire Water (Port) - Engine Crank Case (S/N Sample Tag PA-71001A-S1)
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON HP 15W40 (806 LTR)**

## 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 INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PC** | PC | PC0035712 |
| Sample Date | | Client Info | | **08 Sep 2023** | 26 Feb 2023 | 13 Nov 2020 |
| 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 |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >6 | **<1.0** | <1.0 | 4.8 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | **0** | 0 | 0 |
| Iron | ppm | ASTM D5185(m) | >100 | **3** | 3 | 11 |
| Chromium | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |
| Nickel | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **1** | <1 | 2 |
| Lead | ppm | ASTM D5185(m) | >40 | **2** | 2 | 8 |
| Copper | ppm | ASTM D5185(m) | >330 | **6** | 5 | 191 |
| Tin | ppm | ASTM D5185(m) | >15 | **<1** | <1 | 2 |
| Antimony | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

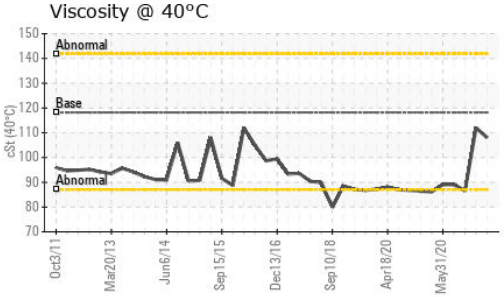
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **<1** | 1 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **53** | 54 | <1 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **881** | 902 | 14 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **935** | 1000 | 2215 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **972** | 1025 | 896 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **1069** | 1089 | 1151 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **2446** | 2533 | 3181 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **4** | 3 | 7 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 2 | 3 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |

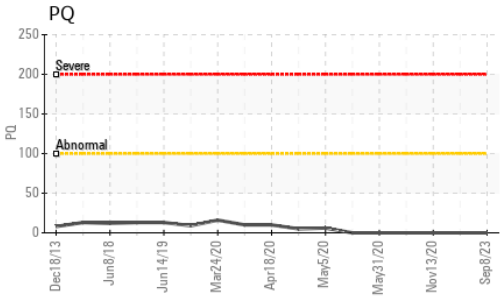
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **0** | 0 | 0.2 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **4.3** | 4.6 | 6.9 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **17.1** | 20.0 | 20.1 |

# OIL ANALYSIS REPORT

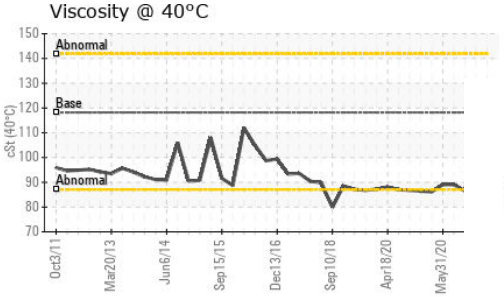
Viscosity @ 40°C



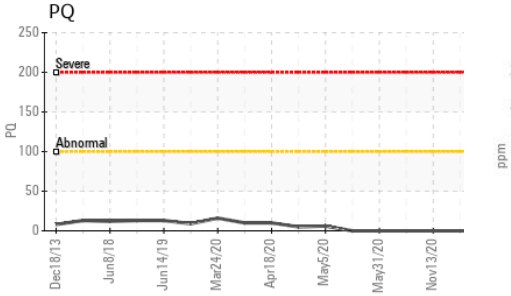

PQ




Viscosity @ 40°C




PQ




| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >2560000 | --- | --- | --- |
| Particles >6µm | | ASTM D7647 | >2560000 | --- | --- | --- |
| Particles >14µm | | ASTM D7647 | >2560000 | --- | --- | --- |
| Particles >21µm | | ASTM D7647 | >640000 | --- | --- | --- |
| Particles >38µm | | ASTM D7647 | >160000 | --- | --- | --- |
| Particles >71µm | | ASTM D7647 | >40000 | --- | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >28/28/28 | --- | --- | --- |

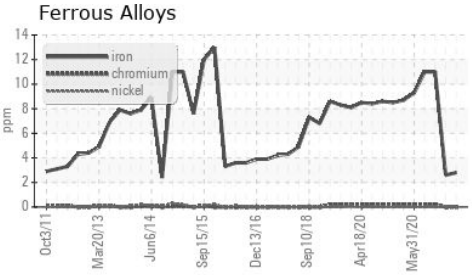
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **12.0** | 13.1 | 15.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 9.8 | **8.77** | 8.92 | 5.58 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

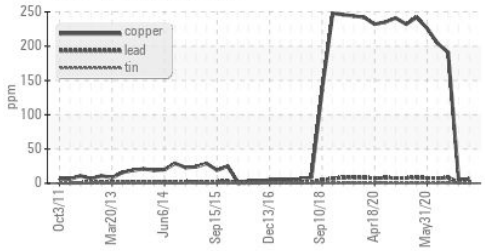
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 118.2 | **108** | 112 | 86.5 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.6 | **14.5** | 14.9 | 12.6 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 139 | **137** | 137 | 142 |

## GRAPHS

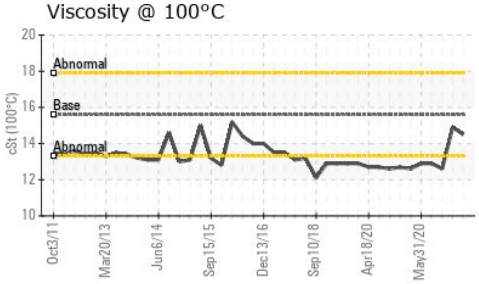
Ferrous Alloys



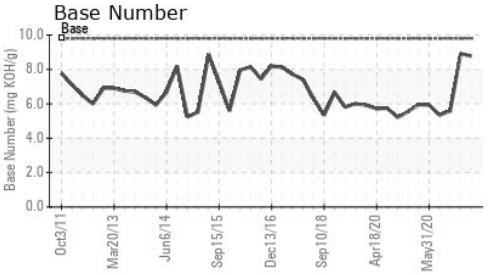

Non-ferrous Metals




Viscosity @ 100°C




Base Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : PC
**Lab Number** : 02584630
**Unique Number** : 5645695
**Test Package** : MAR 2 ( Additional Tests: KV40, PQ, PrtCount, VI )
**Received** : 22 Sep 2023
**Diagnosed** : 25 Sep 2023
**Diagnostician** : Bill Quesnel

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*


**Suncor - Terra Nova Projects**
Scotia Centre, 235 Water Strret
St. John`s, NL
CA A1C 1B6
Contact: Josh Hynes
joshynes@suncor.com
T: (709)778-3575
F: (709)724-2835