

### **OIL ANALYSIS REPORT**

Sample Rating Trend

**WEAR** 

# Machine Id 223007-705

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- Ga

#### DIAGNOSIS

#### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. ( Customer Sample Comment: Sampled oil )

#### 🔺 Wear

The chromium level is abnormal. All other component wear rates are normal.

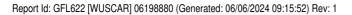
#### Contamination

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.

Oil Age       h         Oil Changed       ample Status         Sample Status       I         CONTAMINATIO         Fuel       Image: Control of the status         Water       Glycol         WEAR METALS         Iron       p         Chromium       p         Nickel       p         Titanium       p         Silver       p         Aluminum       p         Lead       p         Copper       p         Tin       p         Vanadium       p         ADDITIVES       F	opm opm opm opm opm opm opm opm opm opm	WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >100 >20 >4	Current         GFL0120932         30 May 2024         0         Not Changd         ABNORMAL         <1.0         <1.0         <1.0         NEG         NEG         38         27         0         0         0         0         0         0         0         0         0         38         0         0         0         0         3         0         2		history2         GFL0102816         02 Dec 2023         0         Not Changd         ABNORMAL         history2         <1.0         NEG         NEG         50         ≤1.0         0         32         <1         0         33         <1         3         <1         3         <1         3         <1         3         <1         3
Sample Number Sample Date Machine Age h Oil Age h Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron p Chromium p Chromium p Lead p Copper p Tin p Canadium p Cadmium p Cadmium p	opm opm opm opm opm opm opm opm opm opm	Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >5 >0.2 limit/base >100 >20 >4 >3 >20 >40 >330	GFL0120932 30 May 2024 0 Not Changd ABNORMAL <urrent <urrent 38 <urrent 38 <urrent 38 <urrent 0 0 0 0 0 3 0 0 2 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0</urrent </urrent </urrent </urrent </urrent 	GFL0110295 05 Mar 2024 0 0 Not Changd ABNORMAL 1.0   4.0   1.0   NEG   NEG   1.0   34   25   <1   0   4   0	GFL0102816 02 Dec 2023 0 Not Changd ABNORMAL history2 <1.0 NEG NEG bistory2 50 ▲ 32 <1 0 0 3 <1
Sample Date Machine Age h Oil Age h Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron p Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Vanadium p Cadmium p	DPM DPM DPM DPM DPM DPM DPM DPM DPM DPM	Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	30 May 2024 0 0 Not Changd ABNORMAL < <1.0 NEG NEG 0 Current 38 ▲ 27 0 0 0 0 3 3 0 0 2	05 Mar 2024 0 0 Not Changd ABNORMAL 1.0   4.0   NEG   NEG   1.0   34   25   <1   0   4   0	02 Dec 2023 0 0 Not Changd ABNORMAL <pre></pre>
Machine Age h Oil Age h Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron p Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Vanadium p Cadmium p	DPM DPM DPM DPM DPM DPM DPM DPM DPM DPM	Client Info Client Info Client Info Method WC Method WC Method WC Method MC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	0 0 Not Changd ABNORMAL < <1.0 NEG NEG 0 0 27 0 0 0 0 3 3 0 2	0 0 Not Changd ABNORMAL <1.0 NEG NEG history1 34 ≥5 <1 34 ≥5 <1 <1 0 4 0	0 0 Not Changd ABNORMAL history2<1.0
Dil Age h Dil Age h Dil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS ron p Chromium p Chromium p Silver p Aluminum p Lead p Copper p Fin p Vanadium p Cadmium p	DPM DPM DPM DPM DPM DPM DPM DPM DPM DPM	Client Info Client Info Client Info WC Method WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	0 Not Changd ABNORMAL <urrent &lt;1.0 NEG NEG 0 27 0 0 0 0 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 38 <urrent 30 30 30 30 30 30 30 30 30 30</urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent </urrent 	0 Not Changd ABNORMAL 1.0 1.0 NEG NEG history1 34 25 <1 <1 0 4 0 4 0	0 Not Changd ABNORMAL history2<1.0
Dil Changed Sample Status CONTAMINATIO Fuel Water Blycol WEAR METALS ron p Chromium p Nickel p Silver p Aluminum p Lead p Copper p fin p Aadmium p Cadmium p	DN Dpm Dpm Dpm Dpm Dpm Dpm Dpm Dpm Dpm	Client Info method WC Method WC Method WC Method MC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	Not Changd         ABNORMAL         current         <1.0	Not Changd ABNORMAL 4BNORMAL <ul> <li>history1</li> <li>&lt;1.0</li> <li>NEG</li> <li>NEG</li> <li>history1</li> <li>34</li> <li>25</li> <li>&lt;1</li> <li>&lt;1</li> <li>0</li> <li>4</li> <li>0</li> </ul>	Not Changd ABNORMAL 4BNORMAL 1.0 NEG NEG history2 50 ▲ 32 <1 0 0 0 3 <1
Sample Status CONTAMINATIO Fuel Vater Glycol WEAR METALS ron p Chromium p Vickel p Silver p Vluminum p Lead p Copper p Tin p Vanadium p Cadmium p	opm opm opm opm opm opm opm opm	method WC Method WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	ABNORMAL current <1.0 NEG NEG current 38 ▲ 27 0 0 0 0 0 3 0 0 2	ABNORMAL history1 <1.0 NEG NEG history1 34 ▲ 25 <1 <1 0 4 0 0	ABNORMAL history2 <1.0 NEG NEG bistory2 50 ▲ 32 <1 0 0 3 <1
CONTAMINATIO	opm opm opm opm opm opm opm opm	WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	<1.0	history1 <1.0 NEG NEG 34 ▲ 25 <1 <1 0 4 0	history2 <1.0 NEG NEG 50 ▲ 32 <1 0 0 3 <1
Fuel Vater Calycol VEAR METALS ron p Chromium p Vickel p Fitanium p Silver p Aluminum p Lead p Copper p fin p Zaadmium p ADDITIVES	opm opm opm opm opm opm opm opm	WC Method WC Method WC Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >0.2 <b>limit/base</b> >100 >20 >4 >4 >3 >20 >40 >330	<1.0 NEG NEG 38 ▲ 27 0 0 0 0 0 3 0 0 2	<1.0 NEG NEG 34 ▲ 25 <1 <1 0 4 0	<1.0 NEG NEG 50 32 <1 0 0 3 3 <1
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WEAR METALS         ron       p         Chromium       p         Jickel       p         Titanium       p         Silver       p         Auminum       p         Lead       p         Copper       p         Tin       p         Vanadium       p         ADDITIVES       p	opm opm opm opm opm opm opm opm	WC Method method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >100 >20 >4 >3 >20 >40 >330	NEG current 38 ▲ 27 0 0 0 0 3 0 2	NEG history1 34 ▲ 25 <1 <1 0 4 0 0	NEG history2 50 ▲ 32 <1 0 0 0 3 <1
WEAR METALS         ron       p         Chromium       p         Vickel       p         Fitanium       p         Silver       p         Aluminum       p         Lead       p         Copper       p         Fin       p         Anadium       p         ADDITIVES       p	opm opm opm opm opm opm opm opm	Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>100 >20 >4 >3 >20 >40 >330	Current 38 ▲ 27 0 0 0 0 3 0 2	history1 34 ▲ 25 <1 <1 0 4 0	history2 50 ▲ 32 <1 0 0 3 <1
ron p Chromium p Nickel p Silver p Aluminum p Lead p Copper p Fin p Anadium p Cadmium p	opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>100 >20 >4 >3 >20 >40 >330	38 ▲ 27 0 0 0 3 0 2	34 ▲ 25 <1 <1 0 4 0	50 ▲ 32 <1 0 0 3 <1
Chromium p Vickel p Fitanium p Silver p Aluminum p Lead p Copper p Fin p Vanadium p Cadmium p ADDITIVES	opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >4 >3 >20 >40 >330	▲ 27 0 0 0 0 3 0 2	25 <1 <1 0 4 0	<ul> <li>32</li> <li>&lt;1</li> <li>0</li> <li>0</li> <li>3</li> <li>&lt;1</li> </ul>
Vickel     p       Titanium     p       Silver     p       Numinum     p       Lead     p       Copper     p       Tin     p       Vanadium     p       Cadmium     p	opm opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>4 >3 >20 >40 >330	0 0 3 0 2	<1 <1 0 4 0	<1 0 0 3 <1
iitanium     p       Silver     p       Numinum     p       Lead     p       Copper     p       Tin     p       Vanadium     p       Cadmium     p	opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>3 >20 >40 >330	0 0 3 0 2	<1 0 4 0	0 0 3 <1
Silver p Numinum p Lead p Copper p Tin p Vanadium p Cadmium p ADDITIVES	opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	0 3 0 2	0 4 0	0 3 <1
Numinum     p       Lead     p       Copper     p       Tin     p       Vanadium     p       Cadmium     p	opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	3 0 2	4 0	3 <1
ead p Copper p in p /anadium p Cadmium p ADDITIVES	opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m	>40 >330	0 2	0	<1
Copper p Tin p Vanadium p Cadmium p ADDITIVES	opm opm opm	ASTM D5185m ASTM D5185m	>330	2		
in p Vanadium p Cadmium p ADDITIVES	ppm ppm	ASTM D5185m		_	1	2
Vanadium p Cadmium p ADDITIVES	opm		>15			3
ADDITIVES	- 1-	ACTM DE10Em		0	<1	<1
ADDITIVES		ASTM D5185m		0	0	<1
	opm	ASTM D5185m		0	0	0
Boron n		method	limit/base	current	history1	history2
poloii p	opm	ASTM D5185m	0	0	3	6
Barium p	opm	ASTM D5185m	0	<1	0	0
<b>/lolybdenum</b> p	opm	ASTM D5185m	60	53	52	42
Manganese p	opm	ASTM D5185m	0	<1	0	<1
<b>/lagnesium</b> p	opm	ASTM D5185m	1010	803	811	718
Calcium p	opm	ASTM D5185m	1070	978	945	873
Phosphorus p	opm	ASTM D5185m	1150	973	927	839
Zinc p	opm	ASTM D5185m	1270	1111	1134	1015
Sulfur p	opm	ASTM D5185m	2060	3048	2776	2066
CONTAMINANTS	S	method	limit/base	current	history1	history2
Silicon p	opm	ASTM D5185m	>25	2	8	9
Sodium p	opm	ASTM D5185m		3	4	4
Potassium p	opm	ASTM D5185m	>20	0	1	0
INFRA-RED		method	limit/base	current	history1	history2
Soot % %	%	*ASTM D7844	>3	0.8	0.7	0.9
Altration A	Abs/cm	*ASTM D7624	>20	11.2	10.3	11.6
		*ASTM D7415	>30	20.9	20.2	20.8
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Dxidation Al	Abs/.1mm					
Base Number (BN)	105/.111111	*ASTM D7414	>25	18.9	18.0	19.0



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(mg KOH/g)

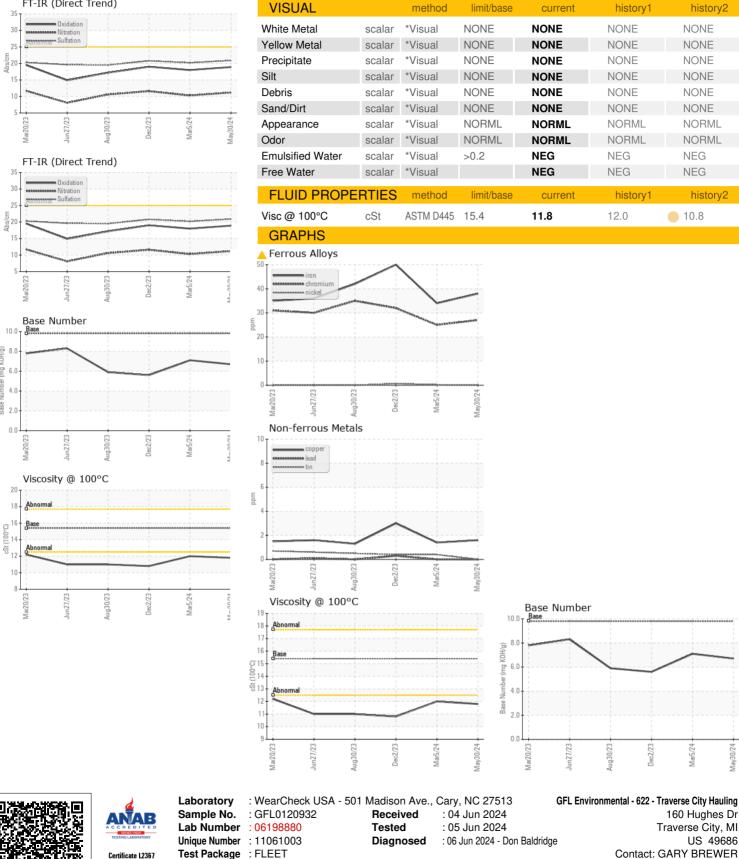
umber

Base

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FT-IR (Direct Trend)

## **OIL ANALYSIS REPORT**



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)

T: F:

/lav30/24

Submitted By: TECHNICIAN ACCOUNT Page 2 of 2

Dec2/23

Mar5/24

160 Hughes Dr

US 49686

Traverse City, MI

Contact: GARY BREWER

Aua30/23

history1

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

history

NEG

NEG

12.0

history2

NONE

NONE

NONE

NONE

NONE

NONE

NORML

NORML

history

NEG

NEG

10.8