

# **OIL ANALYSIS REPORT**









713007 Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (32 QTS)

# DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

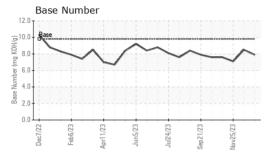
### **Fluid Condition**

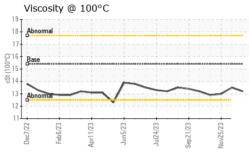
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Oil Age Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	hrs hrs	method Client Info Method WC Method WC Method WC Method WC Method ASTM D5185m	>5 >2 >2 >2 >20 >40 >330	current GFL0068868 13 Jan 2024 2494 259 Not Changd NORMAL  current <1.0 NEG NEG  current  5 <1 3 0 0 1 0 <1 <1 <1	history1 GFL0097176 11 Dec 2023 2370 135 Not Changd NORMAL history1 <1.0 NEG NEG history1 6 <1 3 <1 0 2 <1 1 <1	history2 GFL0097142 25 Nov 2023 2235 550 Changed NORMAL history2 <1.0 NEG NEG history2 9 <1 3 0 0 2 0 2 <1
Sample Date Machine Age Oil Age Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm	Client Info Client Info Client Info Client Info Client Info Client Info  Method WC Method WC Method WC Method METH	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	13 Jan 2024 2494 259 Not Changd NORMAL current <1.0 NEG NEG current 5 <1 3 0 0 0 1 0 <1	11 Dec 2023 2370 135 Not Changd NORMAL history1 <1.0 NEG NEG history1 6 <1 3 <1 0 2 <1 1	25 Nov 2023 2235 550 Changed NORMAL history2 <1.0 NEG NEG history2 9 <1 3 0 0 2 0 2
Sample Date Machine Age Oil Age Oil Age Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm	Client Info Client Info Client Info Client Info  Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	2494 259 Not Changd NORMAL  current  <1.0 NEG NEG  current  5 <1 3 0 0 1 0 <1	2370 135 Not Changd NORMAL history1 <1.0 NEG NEG 6 <1 3 <1 0 2 <1 1	2235 550 Changed NORMAL history2 <1.0 NEG NEG history2 9 <1 3 0 0 2 0 2
Machine Age Oil Age Oil Age Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm	Client Info Client Info Client Info  Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	259 Not Changd NORMAL  current  <1.0 NEG NEG  current  5 <1 3 0 0 1 0 <1	Not Changd NORMAL history1 <1.0 NEG NEG history1 6 <1 3 <1 0 2 <1 1	550 Changed NORMAL history2 <1.0 NEG NEG  history2 9 <1 3 0 0 2 0 2
Oil Age Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method WC Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	Not Changd NORMAL  current  <1.0 NEG NEG  current  5 <1 3 0 0 1 0 <1	Not Changd NORMAL  history1  <1.0 NEG NEG  history1  6  <1 3  <1 0 2  <1 1	Changed NORMAL  history2  <1.0 NEG NEG  history2  9  <1 3 0 0 2 0 2
Oil Changed Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method WC Method WC Method WC Method MC Method METHOD METHOD ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	Current	NORMAL history1 <1.0 NEG NEG history1 6 <1 3 <1 0 2 <1 1	NORMAL history2 <1.0 NEG NEG history2 9 <1 3 0 0 2 0 2
Sample Status  CONTAMINATIO Fuel Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method WC Method MEthod ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	current <1.0 NEG NEG current 5 <1 3 0 0 1 0 <1	history1 <1.0 NEG NEG history1 6 <1 3 <1 0 2 <1 1	history2 <1.0 NEG NEG history2 9 <1 3 0 0 2 0 2
Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method WC Method MC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	<1.0 NEG NEG Current  5 <1 3 0 0 1 0 <1	<1.0 NEG NEG Nistory1 6 <1 3 <1 0 2 <1 1	<1.0 NEG NEG Nistory2 9 <1 3 0 0 2 0 2
Water Glycol  WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	NEG NEG current 5 <1 3 0 0 1 0 <1	NEG NEG history1 6 <1 3 <1 0 2 <1	NEG NEG history2 9 <1 3 0 0 2 0
Glycol  WEAR METALS  Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method  method  ASTM D5185m	limit/base >120 >20 >5 >2 >2 >2 >2 >2 >3 >40 >330	NEG current 5 <1 3 0 0 1 0 <1	NEG history1 6 <1 3 <1 0 2 <1 1	NEG history2 9 <1 3 0 0 2 0 2
WEAR METALS  Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	>120 >20 >5 >2 >2 >2 >2 >2 >40 >330	current  5 <1 3 0 0 1 0 <1	history1  6 <1 3 <1 0 2 <1 1	history2 9 <1 3 0 0 2 0 2
Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>120 >20 >5 >2 >2 >2 >2 >2 >40 >330	5 <1 3 0 0 1 1 0 <1	6 <1 3 <1 0 2 <1 1	9 <1 3 0 0 0 2 0 2 0 2
Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >5 >2 >2 >2 >20 >40 >330	<1 3 0 0 1 0 <1	<1 3 <1 0 2 <1 1	<1 3 0 0 2 0 2
Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >2 >2 >2 >20 >40 >330	3 0 0 1 0 <1	3 <1 0 2 <1 1	3 0 0 2 0 2
Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >2 >20 >40 >330	0 0 1 0 <1	<1 0 2 <1	0 0 2 0
Silver Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >20 >40 >330	0 1 0 <1	0 2 <1 1	0 2 0 2
Aluminum Lead Copper Tin Vanadium Cadmium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	1 0 <1	2 <1 1	2 0 2
Lead Copper Tin Vanadium Cadmium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>40 >330	0 <1	<1 1	0 2
Copper Tin Vanadium Cadmium	ppm ppm	ASTM D5185m ASTM D5185m	>330	<1	1	2
Tin Vanadium Cadmium	ppm ppm	ASTM D5185m				
Vanadium Cadmium	ppm		>15	<1	<1	<1
Cadmium		ASTM D5185m				
	ppm			<1	<1	0
ADDITIVES		ASTM D5185m		0	<1	0
		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	4	8	2
Barium	ppm	ASTM D5185m	0	0	12	0
Molybdenum	ppm	ASTM D5185m	60	59	77	54
Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Magnesium	ppm	ASTM D5185m	1010	976	1231	915
Calcium	ppm	ASTM D5185m	1070	1005	1350	1071
Phosphorus	ppm	ASTM D5185m	1150	1067	1254	1010
Zinc	ppm	ASTM D5185m	1270	1249	1576	1192
Sulfur	ppm	ASTM D5185m	2060	3085	4769	2644
CONTAMINANT	ΓS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	4	5	4
Sodium	ppm	ASTM D5185m		3	3	4
Potassium	ppm	ASTM D5185m	>20	2	5	5
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	0.2	0.1	0.3
Nitration	Abs/cm	*ASTM D7624	>20	6.4	5.4	8.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9	17.6	19.2
FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	13.4	15.5
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.9	8.5	7.1



## **OIL ANALYSIS REPORT**

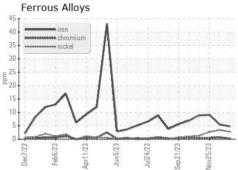


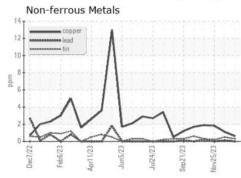


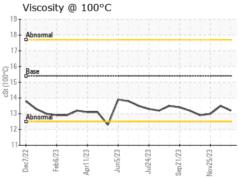
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

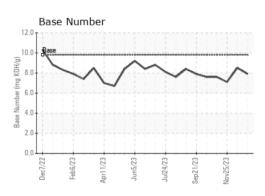
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.5	13.0	

### **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** 

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0068868 : 06065349 : 10836731

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Recieved Diagnosed

: 19 Jan 2024 : 20 Jan 2024 Diagnostician : Wes Davis

GFL Environmental - 073 - Warner Robins - Transwaste

155 Story Road Warner Robins, GA US 31093

Contact: JOSH MALONEY

jmaloney@gflenv.com T:

\* - 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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