

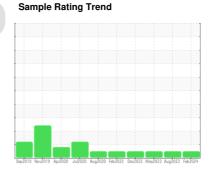
# **OIL ANALYSIS REPORT**



427086-402434

Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- GAL)





## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Engine oil sample )

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

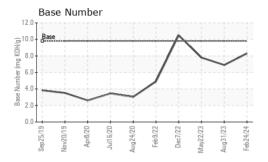
### **Fluid Condition**

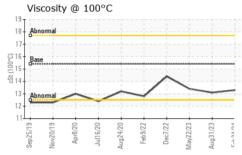
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0114490	GFL0093234	GFL0083459
Sample Date		Client Info		24 Feb 2024	31 Aug 2023	22 May 2023
Machine Age	hrs	Client Info		3001	2680	2091
Oil Age	hrs	Client Info		3001	2680	2091
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	6	5	5
Chromium	ppm	ASTM D5185m	>20	0	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	3	3
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	1	<1	1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1	history2
	ppm ppm					
Boron	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	0	<1	4	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1 0	4	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 62	4 0 62	2 0 57
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 62 0	4 0 62 <1	2 0 57 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 62 0 1136	4 0 62 <1 1014	2 0 57 <1 959
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 0 62 0 1136 1236	4 0 62 <1 1014 1142	2 0 57 <1 959 1063
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	<1 0 62 0 1136 1236 1232	4 0 62 <1 1014 1142 1039	2 0 57 <1 959 1063 1054
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	<1 0 62 0 1136 1236 1232	4 0 62 <1 1014 1142 1039 1293	2 0 57 <1 959 1063 1054 1310
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	0 0 60 0 1010 1070 1150 1270 2060	<1 0 62 0 1136 1236 1232 1494 3696	4 0 62 <1 1014 1142 1039 1293 3563	2 0 57 <1 959 1063 1054 1310 3309
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 62 0 1136 1236 1232 1494 3696 current	4 0 62 <1 1014 1142 1039 1293 3563 history1	2 0 57 <1 959 1063 1054 1310 3309
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	<1 0 62 0 1136 1236 1232 1494 3696	4 0 62 <1 1014 1142 1039 1293 3563 history1	2 0 57 <1 959 1063 1054 1310 3309 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 62 0 1136 1236 1232 1494 3696 current	4 0 62 <1 1014 1142 1039 1293 3563 history1	2 0 57 <1 959 1063 1054 1310 3309 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1	4 0 62 <1 1014 1142 1039 1293 3563 history1 5 4	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1 current	4 0 62 <1 1014 1142 1039 1293 3563 history1 5 4 <1 history1 0.3	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3 4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1	4 0 62 <1 1014 1142 1039 1293 3563 history1 5 4 <1	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  *ASTM D5185m  *ASTM D7844  *ASTM D7624  *ASTM D76185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1 current 0.2 8.2	4 0 62 <1 1014 1142 1039 1293 3563 history1 5 4 <1 history1 0.3 8.4	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3 4 history2 0.3 8.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm	ASTM D5185m  Method  ASTM D5185m ASTM D5185m  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  Method  *ASTM D7624 *ASTM D7624 *ASTM D7415  Method	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1 current 0.2 8.2 18.5 current	4 0 62 <1 1014 1142 1039 1293 3563 history1  5 4 <1 history1 0.3 8.4 19.1 history1	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3 4 history2 0.3 8.9 19.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  *ASTM D5185m  *ASTM D7844  *ASTM D7624  *ASTM D76185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	<1 0 62 0 1136 1236 1232 1494 3696 current 4 3 <1 current 0.2 8.2 18.5	4 0 62 <1 1014 1142 1039 1293 3563 history1 5 4 <1 0.3 8.4 19.1	2 0 57 <1 959 1063 1054 1310 3309 history2 4 3 4 history2 0.3 8.9 19.1



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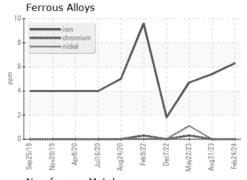


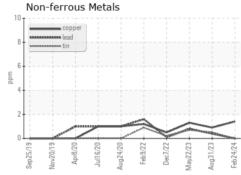


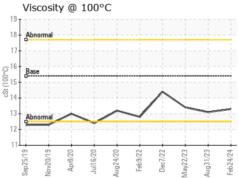
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

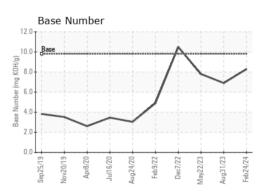
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.1	13.4

## **GRAPHS**













Laboratory Sample No.

Lab Number : 06106658 Unique Number : 10910155 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0114490 Received : 01 Mar 2024 : 05 Mar 2024

**Tested** Diagnosed : 05 Mar 2024 - Sean Felton

GFL Environmental - 865 - East Mount Hauling

7213 East Mount Houston Road Houston, TX

US 77050 Contact: Saul Castillo saul.castillo@gflenv.com

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)

Report Id: GFL865 [WUSCAR] 06106658 (Generated: 03/05/2024 14:53:29) Rev: 1

Submitted By: TECHNICIAN ACCOUNT

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