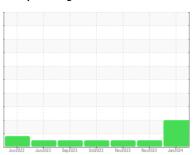


# **OIL ANALYSIS REPORT**

Sample Rating Trend







830M Component

**Diesel Engine** 

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

## DIAGNOSIS

#### Recommendation

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

### Wear

All component wear rates are normal.

## Contamination

There is an abnormal amount of solids and carbon present in the oil.

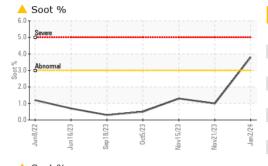
#### ▲ Fluid Condition

The BN level is low. The condition of the oil is acceptable for the time in service.

GAL)		Jun2022	Jun2023 Sep2023	Oct2023 Nov2023 Nov2023	Jan2024	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104189	GFL0059307	GFL0059264
Sample Date		Client Info		02 Jan 2024	21 Nov 2023	15 Nov 2023
Machine Age	hrs	Client Info		5914	5725	5624
Oil Age	hrs	Client Info		5914	5725	5624
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	>100	72	70	63
Chromium	ppm	ASTM D5185m	>20	2	2	2
Nickel	ppm	ASTM D5185m	>2	1	2	5
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	5	4	2
Lead	ppm	ASTM D5185m	>40	4	<1	<1
Copper	ppm	ASTM D5185m	>330	3	10	14
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
		memod	III III Daoo	CultCit	Thotory	
Boron	ppm	ASTM D5185m	0	2	1	<1
	ppm ppm					
Boron	• •	ASTM D5185m	0	2	1	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 8	1	<1
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 8 63	1 0 58	<1 0 59
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 8 63 1	1 0 58 2	<1 0 59
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 8 63 1 974	1 0 58 2 854	<1 0 59 1 869
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	2 8 63 1 974 1126	1 0 58 2 854 1024	<1 0 59 1 869 1025
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	2 8 63 1 974 1126 952	1 0 58 2 854 1024 864	<1 0 59 1 869 1025 897
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	2 8 63 1 974 1126 952 1270	1 0 58 2 854 1024 864 1066	<1 0 59 1 869 1025 897 1198
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1	<1 0 59 1 869 1025 897 1198 1795
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1	<1 0 59 1 869 1025 897 1198 1795 history2
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 >25	2 8 63 1 974 1126 952 1270 2694 current	1 0 58 2 854 1024 864 1066 1984 history1	<1 0 59 1 869 1025 897 1198 1795 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25	2 8 63 1 974 1126 952 1270 2694 current 11	1 0 58 2 854 1024 864 1066 1984 history1 5	<1 0 59 1 869 1025 897 1198 1795 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 8 63 1 974 1126 952 1270 2694 current 11 6	1 0 58 2 854 1024 864 1066 1984 history1 5 7	<1 0 59 1 869 1025 897 1198 1795 history2 7 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	2 8 63 1 974 1126 952 1270 2694 current 11 6 4 <1.0	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	2 8 63 1 974 1126 952 1270 2694 current 11 6 4 <1.0	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0 history1 1	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0 history2 1.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >5 limit/base	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0 history1 1 10.1	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0 history2 1.3 10.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D7824  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7845  method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30 limit/base	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0 history1 1 10.1 22.4 history1	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0 history2 1.3 10.9 23.5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30	2 8 63 1 974 1126 952 1270 2694	1 0 58 2 854 1024 864 1066 1984 history1 5 7 0 <1.0 history1 1 10.1 22.4	<1 0 59 1 869 1025 897 1198 1795 history2 7 7 3 <1.0 history2 1.3 10.9 23.5



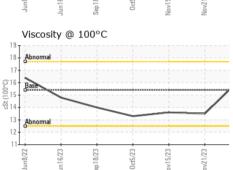
# **OIL ANALYSIS REPORT**



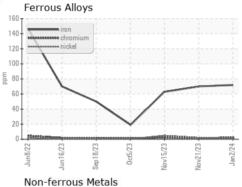
VISUAL		method	ilmit/base	current	nistory i	nistory2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
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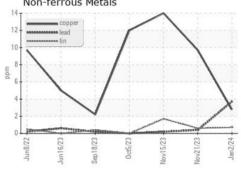
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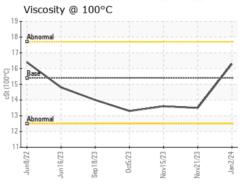


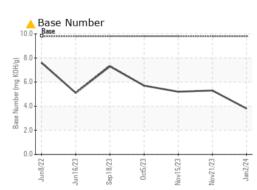


# **GRAPHS**













Laboratory Sample No. Lab Number

Unique Number : 10819423

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0104189 : 06053474

Recieved : 08 Jan 2024 Diagnosed

: 09 Jan 2024 Diagnostician : Don Baldridge

Test Package : FLEET ( Additional Tests: FuelDilution ) 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)

GFL Environmental - 410 - Michigan West

39000 Van Born Rd Wayne, MI US 48184

Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

Report Id: GFL410 [WUSCAR] 06053474 (Generated: 01/09/2024 16:48:57) Rev: 1