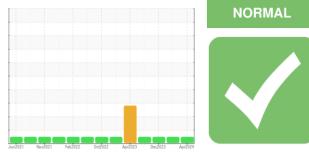


# **OIL ANALYSIS REPORT**

Sample Rating Trend



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

SAMPLE INFORMATION method

### DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

#### 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.

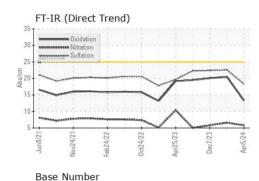
O and a Niemala an						
Sample Number		Client Info		GFL0108808	GFL0108849	GFL0105651
Sample Date	la un	Client Info		05 Apr 2024	15 Jan 2024	07 Dec 2023
Machine Age	hrs	Client Info		13143	12530	12266
Oil Age	hrs	Client Info		12530 Observed	12266	12086
Oil Changed		Client Info		Changed	Changed	Not Changd
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	>200	9	19	17
Chromium	ppm	ASTM D5185m	>20	0	3	3
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>30	2	3	3
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>30	0	12	12
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
Boron	ppm	Method ASTM D5185m	limit/base	current 2	history1 37	history2 54
	ppm ppm		0			
Boron		ASTM D5185m	0	2	37	54
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	37 2	54 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 56	37 2 41	54 0 38
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 56 0	37 2 41 2	54 0 38 2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 56 0 955	37 2 41 2 562	54 0 38 2 496
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 56 0 955 1055	37 2 41 2 562 1523	54 0 38 2 496 1607
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	0 0 60 0 1010 1070 1150	2 0 56 0 955 1055 1085	37 2 41 2 562 1523 953	54 0 38 2 496 1607 782
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	0 0 60 0 1010 1070 1150 1270	2 0 56 0 955 1055 1085 1313	37 2 41 2 562 1523 953 1141	54 0 38 2 496 1607 782 1080
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	0 0 60 1010 1070 1150 1270 2060	2 0 56 0 955 1055 1085 1313 3870	37 2 41 2 562 1523 953 1141 2777	54 0 38 2 496 1607 782 1080 3077
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	2 0 56 0 955 1055 1085 1313 3870 current	37 2 41 2 562 1523 953 1141 2777 history1	54 0 38 2 496 1607 782 1080 3077 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060 limit/base >30	2 0 56 0 955 1055 1085 1313 3870 current 3	37 2 41 2 562 1523 953 1141 2777 history1 6	54 0 38 2 496 1607 782 1080 3077 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >30	2 0 56 0 955 1055 1085 1313 3870 current 3 2	37 2 41 2 562 1523 953 1141 2777 history1 6 7	54 0 38 2 496 1607 782 1080 3077 history2 5 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	2 0 56 0 955 1055 1085 1313 3870 current 3 2 2 2	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20	54 0 38 2 496 1607 782 1080 3077 history2 5 6 18
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30 <b>limit/base</b> >30	2 0 56 0 955 1055 1085 1313 3870 current 3 2 2 2 current	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20 history1	54 0 38 2 496 1607 782 1080 3077 history2 5 6 18 18 history2
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30 <b>limit/base</b> >30	2 0 56 0 955 1055 1085 1313 3870 current 3 2 2 2 2 current 0.5	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20 history1 0.2	54 0 38 2 496 1607 782 1080 3077 history2 5 6 18 18 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 <i>limit/base</i> >20	2 0 56 0 955 1055 1085 1313 3870 current 3 2 2 2 current 0.5 5.8	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20 history1 0.2 6.6	54 0 38 2 496 1607 782 1080 3077 history2 5 6 18 5 6 18 history2 0.2 5.8
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 ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 <b>imit/base</b> >3 20	2 0 56 0 955 1055 1085 1313 3870 current 3 2 2 2 current 0.5 5.8 18.3 current	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20 history1 0.2 6.6 22.6 history1	54 0 38 2 496 1607 782 1080 3077 <b>history2</b> 5 6 18 <b>bistory2</b> 0.2 5.8 22.4 <b>bistory2</b>
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 220 <b>imit/base</b> >3 >20 >30	2 0 56 0 955 1055 1085 1313 3870 <u>current</u> 3 2 2 2 2 <u>current</u> 0.5 5.8 18.3	37 2 41 2 562 1523 953 1141 2777 history1 6 7 20 history1 0.2 6.6 22.6	54 0 38 2 496 1607 782 1080 3077 <b>history2</b> 5 6 18 <b>history2</b> 0.2 5.8 22.4

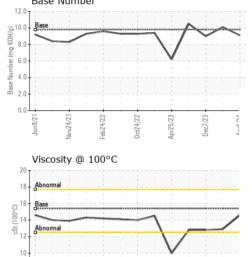


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## **OIL ANALYSIS REPORT**





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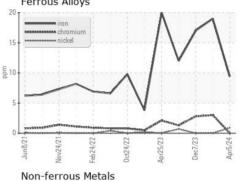
Dec7/23 -

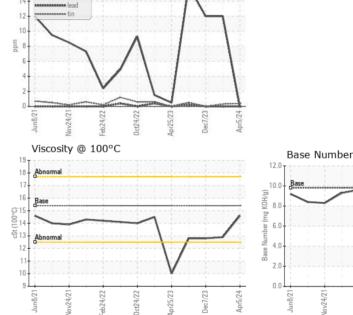
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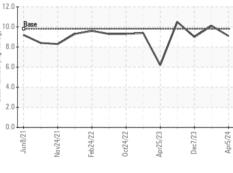
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VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		method	IIIIII/Dase	current	HISTOLAL	TIIStOLYZ
Visc @ 100°C	cSt	ASTM D445	15.4	14.6	12.9	12.8
GRAPHS						

Ferrous Alloys







Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 415 - Michigan East Sample No. : GFL0108808 6200 Elmridge Received : 11 Apr 2024 Lab Number : 06146421 Tested : 12 Apr 2024 Sterling Heights, MI US 48313 Unique Number : 10976499 Diagnosed : 12 Apr 2024 - Wes Davis Test Package : FLEET Contact: Frank Wolak Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. fwolak@gflenv.com T: (586)825-9514 \* - 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) F:

Report Id: GFL415 [WUSCAR] 06146421 (Generated: 04/12/2024 16:43:34) Rev: 1

Submitted By: Frank Wolak

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