

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 413036

Fluid

Component
Diesel Engine

PETRO CANADA DURON SHP 15W40 (11 GAL)

### DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

#### 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.

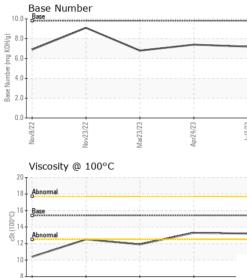
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0074604	GFL0074575	GFL0066888
Sample Date		Client Info		07 Jul 2023	24 Apr 2023	23 Mar 2023
Machine Age	hrs	Client Info		2470	1932	1697
Oil Age	hrs	Client Info		538	246	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.5
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	11	6	24
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	<1	7
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	2	1	6
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	4	5	49
Tin	ppm	ASTM D5185m	>15	1	0	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
			11 11 11			
ADDITIVES		method				history2
Boron	ppm	ASTM D5185m	limit/base	current 4	history1 11	nistory2 7
	ppm ppm					
Boron		ASTM D5185m	0	4	11	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	4 0	11 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 65	11 0 65	7 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 65 <1	11 0 65 <1	7 0 62 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	4 0 65 <1 849	11 0 65 <1 904	7 0 62 2 770
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	4 0 65 <1 849 1046	11 0 65 <1 904 1087	7 0 62 2 770 1167
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	4 0 65 <1 849 1046 929	11 0 65 <1 904 1087 983	7 0 62 2 770 1167 924
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	4 0 65 <1 849 1046 929 1112	11 0 65 <1 904 1087 983 1205	7 0 62 2 770 1167 924 1115
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 0 1010 1070 1150 1270 2060	4 0 65 <1 849 1046 929 1112 2834	11 0 65 <1 904 1087 983 1205 3574	7 0 62 2 770 1167 924 1115 2716
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 1010 1070 1150 1270 2060	4 0 65 <1 849 1046 929 1112 2834 current	11 0 65 <1 904 1087 983 1205 3574 history1	7 0 62 2 770 1167 924 1115 2716 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 imit/base >25	4 0 65 <1 849 1046 929 1112 2834 current 4	11 0 65 <1 904 1087 983 1205 3574 history1 3	7 0 62 2 770 1167 924 1115 2716 history2 8
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 imit/base >25	4 0 65 <1 849 1046 929 1112 2834 <u>current</u> 4 1	11 0 65 <1 904 1087 983 1205 3574 history1 3 4	7 0 62 2 770 1167 924 1115 2716 history2 8
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	4 0 65 <1 849 1046 929 1112 2834 current 4 1 5	11 0 65 <1 904 1087 983 1205 3574 history1 3 4 2	7 0 62 2 770 1167 924 1115 2716 history2 8 < <1 14
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25	4 0 65 <1 849 1046 929 1112 2834 <u>current</u> 4 1 5 <u>current</u>	111 0 65 <1 904 1087 983 1205 3574 history1 3 4 2 history1	7 0 62 2 770 1167 924 1115 2716 history2 8 < <1 14 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 TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	4 0 65 <1 849 1046 929 1112 2834 current 4 1 5 current 0.3	11 0 65 <1 904 1087 983 1205 3574 history1 3 4 2 history1 0.2	7 0 62 2 770 1167 924 1115 2716 history2 8 < <1 14 history2 0.4
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	4 0 65 <1 849 1046 929 1112 2834 <i>current</i> 4 1 5 <i>current</i> 0.3 7.2	111 0 65 <1 904 1087 983 1205 3574 history1 3 4 2 history1 0.2 5.4	7 0 62 2 770 1167 924 1115 2716 history2 8 < <1 14 14 history2 0.4 7.8
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 D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >4 >20	4 0 65 <1 849 1046 929 1112 2834 <i>current</i> 4 1 5 <i>current</i> 0.3 7.2 18.6	111 0 65 <1 904 1087 983 1205 3574 history1 3 4 2 history1 0.2 5.4 16.2 history1	7 0 62 2 770 1167 924 1115 2716 history2 8 <1 14 14 history2 0.4 7.8 18.7
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 imit/base >25 20 imit/base >4 >20 >30 imit/base	4 0 65 <1 849 1046 929 1112 2834 <i>current</i> 4 1 5 <i>current</i> 0.3 7.2 18.6	111 0 65 <1 904 1087 983 1205 3574 history1 3 4 2 history1 0.2 5.4 16.2	7 0 62 2 770 1167 924 1115 2716 history2 8 <1 14 14 history2 0.4 7.8 18.7 history2



Nov9/22

Vov23/22

# **OIL ANALYSIS REPORT**



Mar23/23

Apr24/23

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
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.3	<b>1</b> 1.9
GRAPHS						
Ferrous Alloys						
iron						
50 - nickel						
		1				
40 30						
	~					
20	$\sim$					
10		-				
O ARGARANTE DE CONTRACTOR OFFICIAL		and the second se				
	5	23				
	ar23/23 -	pr24/23 -	Jul7/23			
Nov9/22 Nov23/22	Mar23/23	Apr24/23 -	Jul7/23			
	_	Apr24/23 -	Jui7/23			
Non-ferrous Metals	_	Apr24/23	711/12/2			
Non-ferrous Metals	_	Apr24/23				
Non-ferrous Metals	_	Api24/23	10000000000000000000000000000000000000			
Non-ferrous Metals	_	Ap:24/23				
Non-ferrous Metals	_	Api24/23	27/11/2			
Non-ferrous Metals	_	Api24/23	27/11/23			
Non-ferrous Metals	_	Apr24/23				
Non-ferrous Metals	5					
Non-ferrous Metals	5		111/123			
Non-ferrous Metals	_	Api24/23		Bace Number		
Non-ferrous Metals	5			Base Number		
Non-ferrous Metals	5		22 Ling 10.0	Base Number		
Non-ferrous Metals	5		22 Ling 10.0	Base Number		
Non-ferrous Metals	5		22 Ling 10.0	Base Number		
Non-ferrous Metals	5		22 Ling 10.0	Base Number		
Non-ferrous Metals	5		22 Ling 10.0	Base Number		
Non-ferrous Metals	5		10.0 per (und KOH(0) 0.0 0.0	Base Number		
Non-ferrous Metals	5		10.0 (0)HOX But Jack 4.0 (0)HOX 4.0 (0)HOX BUT JACK 4.0 (0)HOX BUT	Base Number		
Non-ferrous Metals	5		10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Basse Number		Api24/23

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 095 - Atlanta West Laboratory Sample No. : GFL0074604 Received : 17 Jul 2023 2699 Cochran Industrial Blvd : 05899622 Lab Number Diagnosed : 18 Jul 2023 Douglasville, GA Unique Number : 10560978 Diagnostician : Jonathan Hester US 30127-1332 Test Package : FLEET Contact: Darrell Welch Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. darrell.welch@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (800)207-6618 F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)