

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 414059 Component

Fluid

**Diesel Engine** 

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

DIAGNOSIS	

#### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

## 🔺 Wear

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

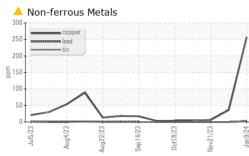
The condition of the oil is suitable for further service.

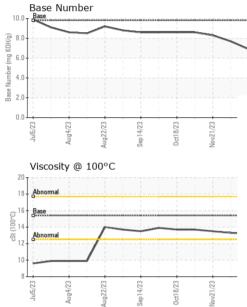
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100223	GFL0100190	GFL0100228
Sample Date		Client Info		09 Jan 2024	18 Dec 2023	21 Nov 2023
Machine Age	hrs	Client Info		1316	1174	1017
Oil Age	hrs	Client Info		150	150	400
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	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	19	14	11
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	2	<1	1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	2	2
Lead	ppm	ASTM D5185m	>40	3	0	0
Copper	ppm	ASTM D5185m	>330	<u> </u>	36	6
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	<1	1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m		1 0	<1 0	1 2
Barium	ppm	ASTM D5185m	0 60	0	0	2
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 63	0 54	2 58
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 63 <1	0 54 <1	2 58 0
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 63 <1 986	0 54 <1 921	2 58 0 883
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 63 <1 986 1010	0 54 <1 921 1005	2 58 0 883 1014
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 60 0 1010 1070 1150	0 63 <1 986 1010 1041	0 54 <1 921 1005 938	2 58 0 883 1014 930
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	0 60 0 1010 1070 1150 1270	0 63 <1 986 1010 1041 1264	0 54 <1 921 1005 938 1163	2 58 0 883 1014 930 1150
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 60 0 1010 1070 1150 1270 2060 limit/base	0 63 <1 986 1010 1041 1264 2695	0 54 <1 921 1005 938 1163 2761	2 58 0 883 1014 930 1150 4391
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	0 60 0 1010 1070 1150 1270 2060 limit/base	0 63 <1 986 1010 1041 1264 2695 current	0 54 <1 921 1005 938 1163 2761 history1	2 58 0 883 1014 930 1150 4391 history2
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	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 63 <1 986 1010 1041 1264 2695 current 8	0 54 <1 921 1005 938 1163 2761 history1 7	2 58 0 883 1014 930 1150 4391 history2 5
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 Method ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 63 <1 986 1010 1041 1264 2695 current 8 4	0 54 <1 921 1005 938 1163 2761 history1 7 3	2 58 0 883 1014 930 1150 4391 history2 5 < 21
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 60 0 1010 1070 1150 1270 2060 limit/base >25	0 63 <1 986 1010 1041 1264 2695 current 8 4 13	0 54 <1 921 1005 938 1163 2761 history1 7 3 8	2 58 0 883 1014 930 1150 4391 history2 5 < 2 10
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	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4	0 63 <1 986 1010 1041 1264 2695 current 8 4 13 current	0 54 <1 921 1005 938 1163 2761 history1 7 3 8 8 history1	2 58 0 883 1014 930 1150 4391 history2 5 <1 10 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >20	0 63 <1 986 1010 1041 1264 2695 current 8 4 13 current 0.3	0 54 <1 921 1005 938 1163 2761 history1 7 3 8 8 history1 0.3	2 58 0 883 1014 930 1150 4391 history2 5 <1 10 history2 0.2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >20	0 63 <1 986 1010 1041 1264 2695 <u>current</u> 8 4 13 <u>current</u> 0.3 8.3	0 54 <1 921 1005 938 1163 2761 history1 7 3 8 8 history1 0.3 7.6	2 58 0 883 1014 930 1150 4391 history2 5 <1 10 history2 0.2 6.8
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 	0 63 <1 986 1010 1041 1264 2695 current 8 4 13 current 0.3 8.3 19.5	0 54 <1 921 1005 938 1163 2761 history1 7 3 8 history1 0.3 7.6 19.2	2 58 0 883 1014 930 1150 4391 history2 5 <1 10 history2 0.2 6.8 19.1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 60 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20 imit/base >30 imit/base	0 63 <1 986 1010 1041 1264 2695 current 8 4 13 current 0.3 8.3 19.5 current	0 54 <1 921 1005 938 1163 2761 history1 7 3 8 history1 0.3 7.6 19.2 history1	2 58 0 883 1014 930 1150 4391 history2 5 <1 10 history2 0.2 6.8 19.1 history2



# **OIL ANALYSIS REPORT**

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





	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
Sep 14/23 Oct18/23 Nov21/23 Jan9/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep Jan Jan	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	13.5
	GRAPHS						
	Ferrous Alloys						
23	25 iron iron						
Sep 14/23 Oct18/23 Nov21/23	20 - nickel						
8	ā 15-			1			
			/				
	10-		/				
	5		1				
	53 53 53 53 53 53 53 53 53 53 53 53 53 5	/23	23	124			
	Jul5/23 Aug4/23 Aug22/23	Sep14/23	0ct18/23 Nov21/23	Jan9/24			
	▲ Non-ferrous Metal	s					
p14, ov21,	copper						
s 0 2	250						
	sessesses tin						
	200			1			
	tin			1			
Ed	200			/			
Ed	200			/			
Ed	200			/			
Ed	200 150 50 0	14/23	18/23	n9/24			
Ed	200 150 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sep14/23	Oct18/23	Jan9,24			
Ed	200 150 50 0		Oct18/23	6700mer	Base Number		
Ed	200 150 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Oct18/23	10.0	Base Number		
Ed	200 150 100 50 0 0 0 0 0 0 0 0 0 0 0 0 0		0et18/23 Nov21/23	10.0	Base Number		
цd	200 150 0 50 0 50 0 50 0 50 50 50		0ct18/23 Nov21/23	10.0	Base Number		
цd	200 150 0 50 0 50 0 50 0 50 50 50		Oct18/23	10.0	Base Number		
цd	200 150 100 50 0 0 0 0 0 0 0 0 0 0 0 0 0		0et18.23 Nov21/23	10.0	Base Number		
цd	200 150 100 50 0 0 0 0 0 0 0 0 0 0 0 0 0		0ct18/23	0.0 8.0 0.0 KOH(0) peq(uid)	Base Number		
цd	200 150 0 50 0 50 0 50 0 50 50 50			10.0 (0) HOX PU 10 A HOX PU 10 A HOX PU 10 A A A A A A A A A A A A A A A A A A A			
цd	200 150 100 50 0 0 0 0 0 0 0 0 0 0 0 0 0			10.0 (0) HOX PU 10 A HOX PU 10 A HOX PU 10 A A A A A A A A A A A A A A A A A A A		12223 14/23	10123
цd	200 150 0 50 0 50 0 50 0 50 0 50 5		0ct18/23 0ct18/23 0ct18/23	10.0 (0)HOX BUI) BUI) 30 900 900 900 900 900 900 900 900 900 9		Aug22/23 Sep14/23	Vertion24 Nov/21/23
Laboratory	200 150 100 50 0 0 0 0 0 0 0 0 0 0 0 0 0	EZUPLICAS 01 Madis	EZIBIDO EZIBIDO Son Ave., Ca	10.0 (0)HOX Bull bull bull bull bull bull bull bull	Pase Pase Pase Pase Pase Pase Pase Pase	vironmental - 1	66 - Phenix City
Laboratory Sample No.	200 150 100 100 100 100 100 100 1	CZH <sub>b</sub> Ldag 601 Madia Recieved	Contact and the second	10.0 (0)HOX Du() 3-0 (0)HOX DU	Pase Pase Pase Pase Pase Pase Pase Pase	vironmental - 10 18 O	66 - Phenix City
Laboratory Sample No. Lab Number	200 150 100 100 100 100 100 100 1	EZH LIGAN	con Ave., Ca d : 16 d ed : 17 d	10.0 (0)HOX Dut 34 (0)HOX DUT	EZUSION GFL Env	vironmental - 10 18 O	66 - Phenix City
Laboratory Sample No.	200 150 100 50 50 50 50 50 50 50 50 50	EUHIdes 601 Madis Recieved Diagnost	son Ave., Ca d : 16 ed : 17 iician : Jon	10.0 (0)HOX Dut 34 (0)HOX DUT	EZUSION GFL Env	vironmental - 1 18 C Contact: DE	<b>66 - Phenix Cit</b> Id Brickyard Re Phenix City, Al



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Submitted By: DARRIN WRIGHT

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