

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 226044

## Component

Diesel Engine

## PETRO CANADA DURON SHP 15W40 (--- 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

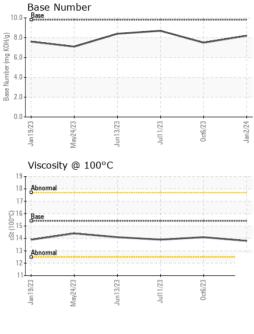
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			11 1.0		1.1	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100890	GFL0086889	GFL0072554
Sample Date		Client Info		02 Jan 2024	06 Oct 2023	11 Jul 2023
Machine Age	mls	Client Info		300405	14169	14169
Oil Age	mls	Client Info		0	14169	0
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method	20.2	NEG	NEG	NEG
				NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	8	16	11
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	0	<1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 5	history1 3	history2 5
	ppm ppm					
Boron		ASTM D5185m	0	5	3	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 0	3 <1	5 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 0 60	3 <1 63	5 0 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 0 60 <1	3 <1 63 <1	5 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	5 0 60 <1 917	3 <1 63 <1 907	5 0 63 <1 1031
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	5 0 60 <1 917 1027	3 <1 63 <1 907 1096	5 0 63 <1 1031 1183
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	5 0 60 <1 917 1027 1022	3 <1 63 <1 907 1096 1017	5 0 63 <1 1031 1183 1082
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	5 0 60 <1 917 1027 1022 1239	3 <1 63 <1 907 1096 1017 1267	5 0 63 <1 1031 1183 1082 1294
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	5 0 60 <1 917 1027 1022 1239 2913	3 <1 63 <1 907 1096 1017 1267 3022	5 0 63 <1 1031 1183 1082 1294 3708
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	5 0 60 <1 917 1027 1022 1239 2913 current	3 <1 63 <1 907 1096 1017 1267 3022 history1	5 0 63 <1 1031 1183 1082 1294 3708 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	5 0 60 <1 917 1027 1022 1239 2913 current 3	3 <1 63 <1 907 1096 1017 1267 3022 history1 3	5 0 63 <1 1031 1183 1082 1294 3708 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	5 0 60 <1 917 1027 1022 1239 2913 current 3 5	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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> >25 >20	5 0 60 <1 917 1027 1022 1239 2913 current 3 5 5 <1	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0
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 2060 225 >25	5 0 60 <1 917 1027 1022 1239 2913 <i>current</i> 3 5 <1 <i>current</i> 0.2	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 3 3	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 bistory2
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 limit/base >25 >20 limit/base >3	5 0 60 <1 917 1027 1022 1239 2913 <b>current</b> 3 5 <1 current	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 history1 0.2	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 history2 0.2
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 2060 225 20 225 20 20 320 33 20 20 20	5 0 60 <1 917 1027 1022 1239 2913 <b>current</b> 3 5 <1 <b>current</b> 0.2 8.0 19.2	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 3 <b>history1</b> 0.2 9.0 19.7	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 history2 0.2 7.6 19.0
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 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	5 0 60 <1 917 1027 1022 1239 2913 <i>current</i> 3 5 <1 <i>current</i> 0.2 8.0	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 history1 0.2 9.0	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 history2 0.2 7.6
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 2060 225 20 225 20 20 320 33 20 20 20	5 0 60 <1 917 1027 1022 1239 2913 <b>current</b> 3 5 <1 <b>current</b> 0.2 8.0 19.2	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 history1 0.2 9.0 19.7 history1 17.0	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 history2 0.2 7.6 19.0
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 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	5 0 60 <1 917 1027 1022 1239 2913 <i>current</i> 3 5 <1 <i>current</i> 0.2 8.0 19.2 <i>current</i>	3 <1 63 <1 907 1096 1017 1267 3022 history1 3 3 3 3 history1 0.2 9.0 19.7 19.7	5 0 63 <1 1031 1183 1082 1294 3708 history2 3 4 0 0 history2 0.2 7.6 19.0 history2



# **OIL ANALYSIS REPORT**

VISUAL



	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
Jan 2/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		13.8	14.1	13.9
	GRAPHS						
	Ferrous Alloys						
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	40 - iron						
5	35 30						
1							
	25 20						
	15						
	10						
		Jul11/23 -	0ct6/23 -	Jan2/24 -			
	Jan 19/23 May24/23	Jult	Octi	Jan			
	Non-ferrous Metal	s					
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	copper						
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	6 -						
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			22 22				
	Jan 19/23 May24/23	Jul11/23	0ct6/23	Jan 2/24			
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	Viscosity @ 100°C	2			Base Number		
			1	10.0			
	18 Abnormal	1	1				
	17-						-
	Base						
0170	Base 15- 8			nber (			
					1		1
	13 - Abnormal			e 2.0			1
	12						
		33	23	0.0		23+	53
	Jan 19/23 May24/23	Jul11/23	0ct6/23	Jan2/24	Jan 19/23 May24/23	Jun13/23 Jul11/23	0ct6/23
	η Ni Δι		_	-	Ϋ́Υ	Ϋ́, Ϋ́	
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ple No.	: GFL0100890		6950 N Michiga				
Number					Saginaw, N		
ue Number	: 10817297	5					US 4860
Package	: FLEET						t: Jeremy Hine
	contact Customer Serv			jhines@gflenv.cor			

Submitted By: Colton Kitts Page 2 of 2