

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 227019

#### Component Diesel Engine

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

### 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.

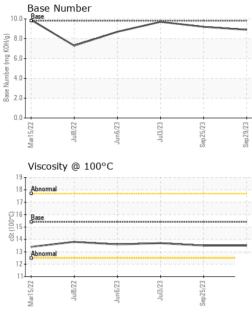
## Fluid Condition

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

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086554	GFL0091835	GFL0086589
Sample Date		Client Info		29 Sep 2023	25 Sep 2023	03 Jul 2023
Machine Age	hrs	Client Info		1040	0	982
Oil Age	hrs	Client Info		1040	0	982
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	17	6
Chromium	ppm	ASTM D5185m	>20	<1	0	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m		5	5	<1
Lead	ppm	ASTM D5185m	>40	1	1	0
Copper	ppm	ASTM D5185m	>330	2	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 3	history1 3	history2 4
	ppm ppm					
Boron		ASTM D5185m	0	3	3	4
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	0	3 0	3 0	4
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 66	3 0 64	4 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 66 <1	3 0 64 <1	4 0 64 <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	3 0 66 <1 946	3 0 64 <1 1037	4 0 64 <1 1003
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	3 0 66 <1 946 1084	3 0 64 <1 1037 1128	4 0 64 <1 1003 1131
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	3 0 66 <1 946 1084 1077	3 0 64 <1 1037 1128 1094	4 0 64 <1 1003 1131 1059
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	3 0 66 <1 946 1084 1077 1284	3 0 64 <1 1037 1128 1094 1333	4 0 64 <1 1003 1131 1059 1262
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	3 0 66 <1 946 1084 1077 1284 3340	3 0 64 <1 1037 1128 1094 1333 3377	4 0 64 <1 1003 1131 1059 1262 3549
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	0 0 60 1010 1070 1150 1270 2060	3 0 66 <1 946 1084 1077 1284 3340 current	3 0 64 <1 1037 1128 1094 1333 3377 history1	4 0 64 <1 1003 1131 1059 1262 3549 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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	3 0 66 <1 946 1084 1077 1284 3340 current 5	3 0 64 <1 1037 1128 1094 1333 3377 history1 5	4 0 64 <1 1003 1131 1059 1262 3549 history2 4
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	3 0 66 <1 946 1084 1077 1284 3340 current 5 <<1	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2
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> >25 >20	3 0 66 <1 946 1084 1077 1284 3340 current 5 <	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	3 0 66 <1 946 1084 1077 1284 3340 current 5 <1 2 current	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0 0 history1	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	3 0 66 <1 946 1084 1077 1284 3340 <u>current</u> 5 <1 2 <u>current</u> 0.8	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0 history1 0.7	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0 history2 0.5
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 imit/base >25 >20 imit/base >3 >20	3 0 66 <1 946 1084 1077 1284 3340 current 5 <1 2 current 0.8 10.0	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0 history1 0.7 9.1	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0 history2 0.5 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 2060 225 20 225 20 <b>imit/base</b> >3 >20 >30	3 0 66 <1 946 1084 1077 1284 3340 current 5 <1 2 current 0.8 10.0 20.2 current	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0 <u>history1</u> 0.7 9.1 19.7	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0 history2 0.5 7.8 19.8
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 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 33 20 330 20 330	3 0 66 <1 946 1084 1077 1284 3340 <u>current</u> 5 <1 2 <u>current</u> 0.8 10.0 20.2	3 0 64 <1 1037 1128 1094 1333 3377 history1 5 1 0 0 history1 0.7 9.1 19.7 history1	4 0 64 <1 1003 1131 1059 1262 3549 history2 4 2 0 history2 0.5 7.8 19.8 history2



# **OIL ANALYSIS REPORT**



		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	
Jun6/23 Jul3/23	Sep 25/23 Sep 29/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
վո վո	Sepž	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	ERTIES	method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.5	13.7	
		GRAPHS Ferrous Alloys							
		<sup>18</sup>	· · · · · · · · · · · · · ·	~					
Jun6/23 Jul3/23	Sep 25/23	16 - chromium 14 - nickel							
	0			/					
				/					
		4							
		2	Sada Sa Sterrage						
		Mar15/22 Jul8/22	Jul3/23	Sep 25/23	Sep29/23				
		≊ Non-ferrous Meta	,	Š	S				
		10 copper							
		8 - Research lead							
		6							
		Е. 4-							
		2-							
		C.		AND DESCRIPTION OF THE OWNER	1111111111				
		lar15/22 Jul8/22	Jul3/23	3ep25/23	iep29/23				
		≥ Viscosity @ 100°(		õ	õ	Base Number			
		19 18 <b>Abnormal</b>			10.				
		17-			(B) <sup>8.</sup>				
		Dia Base			OX 6.1	D-			
		G 16 Base 15 3 14			Jaquin 4.	0			
		13 Abnormal			.8 .9 .6 .9 .9 .9 .2 .2	0-			
		12			0.				
		Mar15/22	Jul3/23 -	Sep25/23 -	Sep 29/23	Mar15/22 - Jul8/22 -	Jun6/23 - Jul3/23 -	Sep 25/23 -	
		Mar	n 1	Sep	Sep	Mar Jı	Ju Ji	Sep	
		· WearCheck USA	501 Madis	son Ave., Ca					
4	Laboratory				2 -+ 0000		11800 Lewis Ro Chester, V		
	Sample No. Lab Number	: GFL0086554 : <mark>05967332</mark>	Received Diagnose	d : 03 ( ed : 04 (	Oct 2023 Oct 2023		118	Chester, V	
TESTING LABORATORY	Sample No.	: GFL0086554 : <mark>05967332</mark> : 10673883	Received	d : 03 ( ed : 04 (					

Submitted By: TECHNICIAN ACCOUNT