

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 912021 Component

Fluid

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.

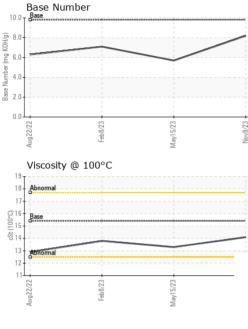
### Fluid Condition

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

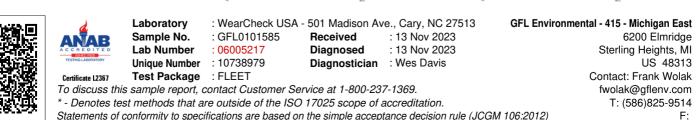
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0101585	GFL0081443	GFL0068674
Sample Date		Client Info		09 Nov 2023	15 May 2023	08 Feb 2023
Machine Age	hrs	Client Info		4379	3091	2451
Oil Age	hrs	Client Info		3091	2451	1230
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	5	18	12
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m		1	5	5
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m		2	2	0
Lead	ppm	ASTM D5185m	>40	_ <1	0	<1
Copper	ppm	ASTM D5185m		1	12	45
Tin	ppm	ASTM D5185m		<1	<1	<1
Vanadium	ppm	ASTM D5185m	210	<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
	ppin				-	-
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	1	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 <1	1 0	1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 <1 60	1 0 60	1 0 59
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 <1 60 <1	1 0 60 <1	1 0 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 <1 60 <1 919	1 0 60 <1 933	1 0 59 <1 891
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 <1 60 <1 919 1123	1 0 60 <1 933 1075	1 0 59 <1 891 1057
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	1 <1 60 <1 919 1123 1042	1 0 60 <1 933 1075 939	1 0 59 <1 891 1057 948
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	1 <1 60 <1 919 1123	1 0 60 <1 933 1075 939 1215	1 0 59 <1 891 1057 948 1165
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	1 <1 60 <1 919 1123 1042	1 0 60 <1 933 1075 939	1 0 59 <1 891 1057 948
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	1 <1 60 <1 919 1123 1042 1221	1 0 60 <1 933 1075 939 1215	1 0 59 <1 891 1057 948 1165
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	1 <1 60 <1 919 1123 1042 1221 3041	1 0 60 <1 933 1075 939 1215 2571	1 0 59 <1 891 1057 948 1165 2504
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	1 <1 60 <1 919 1123 1042 1221 3041 current	1 0 60 <1 933 1075 939 1215 2571 history1	1 0 59 <1 891 1057 948 1165 2504 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	1 <1 60 <1 919 1123 1042 1221 3041 <i>current</i> 4	1 0 60 <1 933 1075 939 1215 2571 history1 3	1 0 59 <1 891 1057 948 1165 2504 history2 3
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 kimit/base >25	1 <1 60 <1 919 1123 1042 1221 3041 current 4 0	1 0 60 <1 933 1075 939 1215 2571 <b>history1</b> 3 8	1 0 59 <1 891 1057 948 1165 2504 <b>history2</b> 3 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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	1 <1 60 <1 919 1123 1042 1221 3041 current 4 0 2	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 8 <1	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25 >20 <b>Imit/base</b>	1 <1 60 <1 919 1123 1042 1221 3041 current 4 0 2 2	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 <1 history1	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3 3 6 3 3
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>Imit/base</b> >25 >20 <b>Imit/base</b>	1 <1 60 <1 919 1123 1042 1221 3041 <i>current</i> 4 0 2 <i>current</i> 0.3	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 <1 history1 0.8	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3 6 3 <i>history2</i> 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	1 <1 60 <1 919 1123 1042 1221 3041 <i>current</i> 4 0 2 <i>current</i> 0.3 6.2	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 <1 history1 0.8 9.4	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3 6 3 <i>history2</i> 0.5 8.6
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 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 >30	1 <1 60 <1 919 1123 1042 1221 3041 <u>current</u> 4 0 2 <u>current</u> 0.3 6.2 19.1	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 <1 1 0.8 9.4 23.0	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3 6 3 <b>history2</b> 0.5 8.6 19.7
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	1 <1 60 <1 919 1123 1042 1221 3041 <i>current</i> 4 0 2 <i>current</i> 0.3 6.2 19.1 <i>current</i>	1 0 60 <1 933 1075 939 1215 2571 history1 3 8 <1 history1 0.8 9.4 23.0 history1	1 0 59 <1 891 1057 948 1165 2504 history2 3 6 3 6 3 <i>history2</i> 0.5 8.6 19.7 <i>history2</i>



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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
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.3	13.8
GRAPHS						
Ferrous Alloys						
5 T						
0- iron chromium						
5 - mickel						
5-						
0						
		~				
5	Contraction of the local division of the loc					
0-						
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		of the local division of the local divisiono				
C. C		and the state of t				
		C7				
		5/23	2/6			
		ay15/23	Vov9/23			
Aug22/22 Feb8/23		May15/23	Nov9/23			
Aug22/22 Feb8/23	5	May15/23	Nov9/23			
Page 22/22 Heft Back Aug 22/23 Heft Back Aug 22/23	S	May15/23	EZ/GAON			
Heb8/23 Heb8/23 Non-ferrous Metal	S	May15/23	Noval23			
Non-ferrous Metal	S	May15/23	Nov923			
Non-ferrous Metal	S	May15/23	EZIGNON			
Non-ferrous Metal	S	May15/23	Nov923			
Non-ferrous Metal	s	May15/23	Nov9/23			
Non-ferrous Metal	S	May 15/23	Nov9/23			
Non-ferrous Metal	S	May15/23	Nov9123			
Non-ferrous Metal	S	May 15/23	Nov9/23			
Non-ferrous Metals	S	May 15/23	Nov9/23			
Non-ferrous Metal	S	May15/23	Nov9123			
Non-ferrous Metals	S	May 15/23	Nov9/23			
Non-ferrous Metal	5	May 15/23	Nu0923			
Non-ferrous Metal	S	May15/23	Nov9123			
Non-ferrous Metal	s					
Non-ferrous Metal	5					
Non-ferrous Metal	S					
Non-ferrous Metal	s	May15/23	Nor9/23			
Hug2222 Feb8/23						
Von-ferrous Metal				Base Number		
Von-ferrous Metal			Nov6/23	Base Number		
Non-ferrous Metals				Base Number		
Non-ferrous Metal			10.0-	Base Number	-	
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			E2(600)	Base Number		
Non-ferrous Metal			Pac (June 707) 0.01 0.01 0.02 0.02	Base Number		
Non-ferrous Metal			10.0 (0)HON (0)HON (0) (0)HON (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)	Base Number		
Non-ferrous Metal			10.0 (0,H0X pu)	Base Number		
Non-ferrous Metal		May15/23	EZ/Grow (D)HOX DUI )=00 (D)HOX			
Non-ferrous Metal			EZ/Grow (D)HOX DUI )=00 (D)HOX	Base Number	Feb.8.23	



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