

## **OIL ANALYSIS REPORT**



Machine Id

### 912059

#### Component Diesel Engine

Fluid 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.

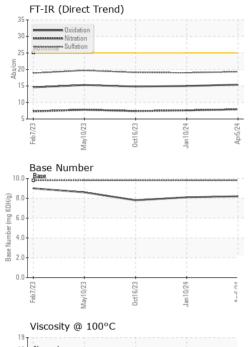
#### Fluid Condition

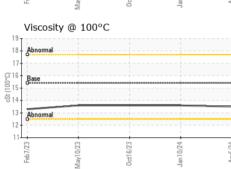
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0112999	GFL0108403	GFL0098411
Sample Date		Client Info		05 Apr 2024	10 Jan 2024	16 Oct 2023
Machine Age	hrs	Client Info		5317	4725	4137
Oil Age	hrs	Client Info		5317	4725	4137
Oil Changed		Client Info		Changed	Changed	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		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	6	8	8
Chromium	ppm	ASTM D5185m	>4	0	0	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	2	2	2
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	0	<1	<1
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	nnm	ASTM D5185m		0	0	0
Caumum	ppm	ASTIVI DSTOSIII		U	0	0
ADDITIVES	ррпі	method	limit/base	current	0 history1	history2
	ppm		limit/base	-	-	-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 1	history1 <1	history2 0
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 1 0	history1 <1 0	history2 0 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 1 0 58	history1 <1 0 62	history2 0 0 56
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 1 0 58 0	history1 <1 0 62 0	history2 0 0 56 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 1 0 58 0 944	history1 <1 0 62 0 1009	history2 0 0 56 <1 922
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 1 0 58 0 944 1040	history1 <1 0 62 0 1009 1056	history2 0 0 56 <1 922 1017
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 1 0 58 0 944 1040 1040	history1 <1 0 62 0 1009 1056 1086	history2 0 56 <1 922 1017 957
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 1 0 58 0 944 1040 1040 1206	history1 <1 0 62 0 1009 1056 1086 1299	history2           0           56           <1           922           1017           957           1184
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method 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	Current 1 0 58 0 944 1040 1040 1206 3192	history1 <1 0 62 0 1009 1056 1086 1299 3001	history2           0           0           56           <1           922           1017           957           1184           2666
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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	Current 1 0 58 0 944 1040 1040 1206 3192 Current	history1 <1 0 62 0 1009 1056 1086 1299 3001 history1	history2 0 0 56 <1 922 1017 957 1184 2666 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	methodASTM D5185mASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 1 0 58 0 944 1040 1040 1206 3192 Current 2	history1           <1           0           62           0           1009           1056           1086           1299           3001           history1           3	history2           0           0           56           <1           922           1017           957           1184           2666           history2           2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	methodASTM D5185mASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >30	current           1           0           58           0           944           1040           1040           1206           3192           current           2           0	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1	history2           0           0           56           <1           922           1017           957           1184           2666           history2           2           2           2           2           2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	Current           1           0           58           0           944           1040           1206           3192           current           2           0           0           0	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1         0	history2         0         0         56         <1         922         1017         957         1184         2666         history2         2         2         2         3
ADDITIVES 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	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 -20	current           1           0           58           0           944           1040           1040           1206           3192           current           2           0           0           0           0           0           0           0	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1         0         history1	history2         0         0         56         <1         922         1017         957         1184         2666         history2         2         3         history2
ADDITIVES 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	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 200 limit/base	current           1           0           58           0           944           1040           1040           1206           3192           current           2           0           0           current           0           0.4	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1         0         history1         0         history1         0.4	history2           0           0           56           <1           922           1017           957           1184           2666           history2           2           2           3           history2           0.5
ADDITIVES 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	method           ASTM D5185m           ASTM D7844           *ASTM D7624           *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >30 220 imit/base >3 >20	current           1           0           58           0           944           1040           1040           1206           3192           current           2           0           0           current           0           0.4           7.9	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1         0         history1         0         0.4         7.6	history2         0         0         56         <1         922         1017         957         1184         2666         history2         2         2         3         history2         0.5         7.4
ADDITIVES 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	method           ASTM D5185m           ASTM D7844           *ASTM D7624           *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 <b>imit/base</b> >3 20	current           1           0           58           0           944           1040           1040           1206           3192           current           2           0           0           0           0           0.4           7.9           19.3	history1         <1         0         62         0         1009         1056         1086         1299         3001         history1         3         1         0         history1         0.4         7.6         19.0	history2         0         0         56         <1         922         1017         957         1184         2666         history2         2         2         3         history2         0.5         7.4         19.1



# **OIL ANALYSIS REPORT**





		VISUAL		method	limit/base	current	history1	history2	
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
1		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
Name	Debris	scalar	*Visual	NONE	NONE	NONE	NONE		
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE		
0ct16/23 Jan10/24 Apr5/24	Jan 10/24 Apr5/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
00	Ap	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	NEG	
		FLUID PROP	PERTIES	method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.6	13.6	
		GRAPHS							
		Ferrous Alloys							
6/23 -	0/24	10 - iron	1	   					
0ct16/23	Jan 10/24	nickel							
		8			_				
		튭 6-							
		4							
		2							
		0							
			6/23	0/24	Apr5/24				
		Feb 7/23 May 1 0/23	0ct16/23	Jan 10/24	Apré				
	1	Non-ferrous Me	tals						
0ct16/23	Jan 10/24	10 copper							
0ct	Jan	8 and an and a second s							
		tin							
		6 -							
		8 4							
		2							
					-				
		Feb 7/23 May1 0/23	)ct16/23	10/24	Apr5/24				
		Fe	Oct	Jan	Aı				
		Viscosity @ 100	°С			Base Number			
		18 - Abnormal			10.0	Base			
		17-		I	- 8.0				
					KOH/g				
		()16 Base ()015 3 14			E 6.0	-			
		53 14							
		10			ase N				
		13 Abnormal			<sup>20</sup> 2.0				
		11	<u>6</u>	4	0.0		en	4	
		Feb 7/23 May1 0/23	0ct16/23	Jan 10/24	Apr5/24	Feb7/23 May10/23	0ct16/23	Jan 10/24	
		Ma	0	ŗ		W	0	ř	
	Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 918 - Har							
TAR	Sample No.	: GFL0112999	Rece	ived : 15	5 Apr 2024	630 E Industrial Driv			
EDITED	Lab Number			<b>Tested</b> : 16 Apr 2024				Hartland, V	
NCC 17023						Nes Davis US 5302 Contact: David McCa			
cate L2367	Unique Number Test Package		Diagr	nosed :16	6 Apr 2024 - W	es Davis	<u> </u>		

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

Report Id: GFL918 [WUSCAR] 06148280 (Generated: 04/16/2024 06:14:24) Rev: 1

Submitted By: David McCall

Page 2 of 2

F: