

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

### 525039

#### 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 INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100427	GFL0076920	GFL0052991
Sample Date		Client Info		05 Apr 2024	22 May 2023	02 Jun 2022
Machine Age	hrs	Client Info		16531	15588	14591
Oil Age	hrs	Client Info		571	416	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	ATTENTION	NORMAL
CONTAMINAT	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.3	<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	>90	23	12	12
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
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	>20	2	2	2
Lead	ppm	ASTM D5185m	>40	- 14	<1	3
Copper	ppm	ASTM D5185m	>330	2	2	<1
Tin	ppm	ASTM D5185m	>15	- <1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	18	57	61
Barium	ppm		0	0	2	0
		ASTM D5185m	60	69	15	71
Molybdenum	ppm	ASTM D5185m ASTM D5185m	60 0	69 <1	15 <1	71 <1
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		<1	15 <1 733	
Molybdenum	ppm ppm ppm	ASTM D5185m	0 1010	<1 1058	<1 733	<1
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0	<1	<1	<1 927
Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070	<1 1058 1300	<1 733 1323	<1 927 1271 1031
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	<1 1058 1300 1126	<1 733 1323 736	<1 927 1271
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270	<1 1058 1300 1126 1337	<1 733 1323 736 883	<1 927 1271 1031 1217
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	0 1010 1070 1150 1270 2060	<1 1058 1300 1126 1337 3527	<1 733 1323 736 883 3057	<1 927 1271 1031 1217 3237
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 Imit/base	<1 1058 1300 1126 1337 3527 current	<1 733 1323 736 883 3057 history1	<1 927 1271 1031 1217 3237 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	<1 1058 1300 1126 1337 3527 current 7	<1 733 1323 736 883 3057 history1 27	<1 927 1271 1031 1217 3237 history2 5
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	<1 1058 1300 1126 1337 3527 current 7 7 7	<1 733 1323 736 883 3057 history1 27 2	<1 927 1271 1031 1217 3237 history2 5 4
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	<1 1058 1300 1126 1337 3527 current 7 7 19	<1 733 1323 736 883 3057 history1 27 2 2 8	<1 927 1271 1031 1217 3237 history2 5 4 4
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6	<1 1058 1300 1126 1337 3527 current 7 7 19 current	<1 733 1323 736 883 3057 history1 27 2 8 history1	<1 927 1271 1031 1217 3237 history2 5 4 4 4 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6	<1 1058 1300 1126 1337 3527 current 7 7 19 current 0.5	<1 733 1323 736 883 3057 history1 27 2 8 8 history1 0.3	<1 927 1271 1031 1217 3237 history2 5 4 4 4 history2 0.2
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 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >20	<1 1058 1300 1126 1337 3527 current 7 7 19 current 0.5 12.5	<1 733 1323 736 883 3057 history1 27 2 8 history1 0.3 11.3	<1 927 1271 1031 1217 3237  history2 5 4 4 4 history2 0.2 8.2
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >6 >20 >20	<1 1058 1300 1126 1337 3527 current 7 7 19 current 0.5 12.5 25.4	<1 733 1323 736 883 3057 history1 27 2 8 history1 0.3 11.3 21.3	<1 927 1271 1031 1217 3237 <b>history2</b> 5 4 4 4 <b>history2</b> 0.2 8.2 20.9
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 ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >6 >20 >30 imit/base	<1 1058 1300 1126 1337 3527 current 7 7 7 19 current 0.5 12.5 25.4 current	<1 733 1323 736 883 3057 history1 27 2 8 history1 0.3 11.3 21.3 history1	<1 927 1271 1031 1217 3237 history2 5 4 4 4 history2 0.2 8.2 20.9 history2



# **OIL ANALYSIS REPORT**

FT-IR (Direct Tre	nd)		VISUAL		method	limit/base	current	history1	history2
Oxidation Nitration			White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Abnormal			Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
5 - Abnormal	Note that the second		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
c			Silt	scalar	*Visual	NONE	NONE	NONE	NONE
0		******	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
5			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Jun2/22	May22/23	Apr5/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jur	May	Api	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Base Number			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			Free Water	scalar	*Visual		NEG	NEG	NEG
.0			FLUID PROPE	RTIES	method	limit/base	current	history1	history2
.0-			Visc @ 100°C	cSt	ASTM D445	15.4	14.7	<b>11.7</b>	14.2
.0 -			GRAPHS						
.0-			Ferrous Alloys						
0			25 T						
Jun2/22	May22/23 -	1 I I I	iron chromium						
Jun	May2	Ann	20 - nickel						
Viscosity @ 100°	°C		15		/				
			E						
18 - Abnormal									
17			5						
16 Base		_	0						
Abnormal	_		Jun2/22 -	May22/23 -		Apr5/24 -			
12-			μη <sub>Γ</sub>	May2		Api			
10			Non-ferrous Meta	ls					
Jun2/22	May22/23	- C D 4	14 copper 1						
٦٢	May	v	12 - Reasons lead		1				
			10-						
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			2	and the second second					
			0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		st-			
			Jun2/22	ay22/23		Apr5/24			
				M		A			
			Viscosity @ 100°0	ز 			Base Numb	er	
			18 - Abnormal			10.0	Base		
			17-			<u> </u>			
			Base			0.8 0.0 Base Number (mg KOH/g)			
			() 15 00[] t;			B 6.0	1		
						aquin 4.0			
			13 Abnormal	-		ase N			
			11	-		<sup>66</sup> 2.0			
			10			0.0	L <u>.</u>		
			Jun2/22	May22/23		Apr5/24	Jun2/22	May22/23	Apr5/24
			ηr	May		AL	٦٢	Mayi	Ap
	4	Laboratory	: WearCheck USA - 50				GFL	Environmental - 9	
	ANAB	Sample No. Lab Number	: GFL0100427	Recei Teste		6 Apr 2024 7 Apr 2024		171	15 Deleglise St. Antigo, WI
	TESTING LABORATORY	Unique Number		Diagr		Apr 2024	es Davis		US 54409
	Certificate L2367	Test Package							ntact: Kirk Koss
	To discuss this	sample report,	: FLEET contact Customer Serv are outside of the ISO 1					kirk.ko:	ntact: Kirk Koss ss@gflenv.com (715)571-2784

Submitted By: see also GFL927, GFL930 - Kirk Koss