

# **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 929060

#### 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.

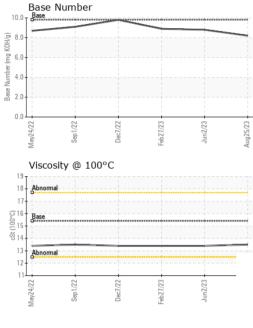
## Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092517	GFL0077943	GFL0071647
Sample Date		Client Info		25 Aug 2023	02 Jun 2023	27 Feb 2023
Machine Age	hrs	Client Info		10750	10220	9634
Oil Age	hrs	Client Info		608	603	520
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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>110	6	5	5
Chromium	ppm	ASTM D5185m	>4	<1	0	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	0	2	1
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	<1	<1	<1
Tin	ppm	ASTM D5185m	>4	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
			Parel II de la cale			le la traversió
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	ASTM D5185m	limit/base	current 2	history1 0	nistory2 2
	ppm ppm					
Boron		ASTM D5185m	0	2	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	0 0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 62	0 0 60	2 0 58
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 62 <1	0 0 60 0	2 0 58 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	2 0 62 <1 1007	0 0 60 0 988	2 0 58 1 894
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	2 0 62 <1 1007 1091	0 0 60 0 988 1141	2 0 58 1 894 1095
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	2 0 62 <1 1007 1091 1076	0 0 60 0 988 1141 1022	2 0 58 1 894 1095 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	2 0 62 <1 1007 1091 1076 1309	0 0 60 0 988 1141 1022 1282	2 0 58 1 894 1095 948 1179
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	2 0 62 <1 1007 1091 1076 1309 3698	0 0 60 988 1141 1022 1282 3660	2 0 58 1 894 1095 948 1179 3068
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	2 0 62 <1 1007 1091 1076 1309 3698 current	0 0 60 988 1141 1022 1282 3660 history1	2 0 58 1 894 1095 948 1179 3068 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	0 0 60 1010 1070 1150 1270 2060	2 0 62 <1 1007 1091 1076 1309 3698 current 3	0 0 60 988 1141 1022 1282 3660 history1 2	2 0 58 1 894 1095 948 1179 3068 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	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >30	2 0 62 <1 1007 1091 1076 1309 3698 <u>current</u> 3 2	0 0 60 988 1141 1022 1282 3660 history1 2 2 2	2 0 58 1 894 1095 948 1179 3068 history2 4 1
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> >30	2 0 62 <1 1007 1091 1076 1309 3698 current 3 2 2 2	0 0 60 0 988 1141 1022 1282 3660 history1 2 2 2 2 2	2 0 58 1 894 1095 948 1179 3068 history2 4 1 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 <b>limit/base</b> >20 <b>limit/base</b>	2 0 62 <1 1007 1091 1076 1309 3698 current 3 2 2 2	0 0 60 988 1141 1022 1282 3660 history1 2 2 2 <1 }	2 0 58 1 894 1095 948 1179 3068 history2 4 1 0 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 >30 limit/base >20	2 0 62 <1 1007 1091 1076 1309 3698 <u>current</u> 3 2 2 2 2 <u>current</u> 0.2	0 0 60 988 1141 1022 1282 3660 history1 2 2 2 <1 +istory1 0.2	2 0 58 1 894 1095 948 1179 3068 history2 4 1 0 history2 0.2
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 >30 220 imit/base >3 >20	2 0 62 <1 1007 1091 1076 1309 3698 <i>current</i> 3 2 2 2 <i>current</i> 0.2 7.1	0 0 60 988 1141 1022 1282 3660 history1 2 2 2 2 <1 history1 0.2 7.2	2 0 58 1 894 1095 948 1179 3068 history2 4 1 0 history2 0.2 6.8
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 <b>imit/base</b> >30 <b>imit/base</b> >3 >20 >3	2 0 62 <1 1007 1091 1076 1309 3698 <u>current</u> 3 2 2 2 <u>current</u> 0.2 7.1 18.5	0 0 60 0 988 1141 1022 1282 3660 history1 2 2 2 <1 2 <1 0.2 7.2 19.3	2 0 58 1 894 1095 948 1179 3068 history2 4 1 0 0 history2 0.2 6.8 18.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <b>Iimit/base</b> >30 >20 <b>Iimit/base</b> >3 >20 >30	2 0 62 <1 1007 1091 1076 1309 3698 <i>current</i> 3 2 2 2 <i>current</i> 0.2 7.1 18.5 <i>current</i>	0 0 60 0 988 1141 1022 1282 3660 history1 2 2 2 2 3 6 0 0 2 1 8 1 0.2 7.2 19.3 history1	2 0 58 1 894 1095 948 1179 3068 history2 4 1 0 0 history2 0.2 6.8 18.3 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	
7/23	Jun2/23 - ug25/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Feb27/23	Jun2/23 Aug25/23	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	13.4	13.4	
		GRAPHS							
		Ferrous Alloys							
		14TX							
Feb27/23	Jun2/23	12 - iron chromium							
Feb 2	hun	10 - nickel							
		8							
		2 -							
		5 5 5	23	23	53				
		May24/22 Sep 1/22	Uec//22 Feb27/23	Jun2/23	Aug25/23				
		≥ Non-ferrous Meta	LL.	-	A				
		10 <sub>T</sub>	115 						
		copper							
		8 - Hereiter Igad							
		6							
		u dd							
		4							
		2							
		0			and deliver.				
		lay24/22 Sep1/22	Uec//22 -eb27/23	Jun2/23	Aug25/23				
		2	LL.	ηΓ	Аид				
		Viscosity @ 100°	С			Base Number			
		18 - Abnormal			10.0	Base			
		17-			(B) 8.0				
		ç₁6- Base			, je se				
		G-16 Base 15 15 14			La la				
		<sup>75</sup> 14-	i i 4		4.0				
		13 Abnormal			(b)H03 6.0 8388 Number 4.0				
		12-			2.0				
		11			0.0				
		May24/22 Sep 1/22	Uec//22 Feb27/23	Jun2/23	Aug25/23	May24/22 Sep 1/22	Dec7/22 Feb27/23	Jun2/23	
		May Se	Le Di	ηr	Aug	May	Peb Dc	Ju	
	Laboratory	· MoorChook LICA	501 Madi		n/ NC 07510		(ironmontal (	025 - Omro !!	
4	Laboratory Sample No.	: WearCheck USA - : GFL0092517	501 Made Received		ry, NC 27513 Sep 2023	GFL Environmental - 935 - Omro H 250 Alder Avenu			
CREDITED	Lab Number	: 05950716	Diagnos		Sep 2023 Sep 2023	250 Alder Avenu Omro, V			
SOME PO25	Unique Number				•			US 5496	
tificate L2367	Test Package		3.000					act: Tim Kieff	
discuss this	sample report,	contact Customer Serv					tim.kieffer@gflenv.co		
	Test Package sample report,	e : FLEET contact Customer Serv	Diagnostician : Wes Davis ice at 1-800-237-1369. 7025 scope of accreditation. he simple acceptance decision rule					er@	

ξį,

Contact/Location: Seel also GFL947 - Tim Kieffer - GFL935