

### **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL

# 424011-4665

#### 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.

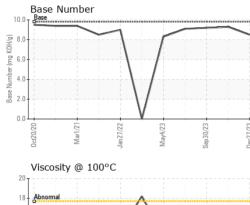
#### Fluid Condition

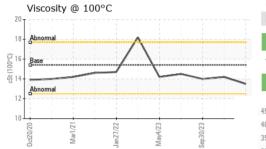
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0101299	GFL0091787	GFL0086553
Sample Date		Client Info		27 Dec 2023	11 Oct 2023	30 Sep 2023
Machine Age	hrs	Client Info		35204	35200	35191
Oil Age	hrs	Client Info		35204	0	0
Oil Changed		Client Info		Not Changd	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	3	5	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	2	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	<1
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 8	history2 5
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	8	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	2 0	8 0	5
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 58	8 0 57	5 0 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 58 <1	8 0 57 <1	5 0 65 <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 58 <1 973	8 0 57 <1 906	5 0 65 <1 1085
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 58 <1 973 1071	8 0 57 <1 906 1008	5 0 65 <1 1085 1189
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 58 <1 973 1071 979	8 0 57 <1 906 1008 1050	5 0 65 <1 1085 1189 1149
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 58 <1 973 1071 979 1327	8 0 57 <1 906 1008 1050 1260	5 0 65 <1 1085 1189 1149 1397
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060	2 0 58 <1 973 1071 979 1327 3159 current 4	8 0 57 <1 906 1008 1050 1260 3123 history1 3	5 0 65 <1 1085 1189 1149 1397 3383 history2 2
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 58 <1 973 1071 979 1327 3159 current	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2	5 0 65 <1 1085 1189 1149 1397 3383 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	2 0 58 <1 973 1071 979 1327 3159 current 4	8 0 57 <1 906 1008 1050 1260 3123 history1 3	5 0 65 <1 1085 1189 1149 1397 3383 history2 2
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	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	2 0 58 <1 973 1071 979 1327 3159 current 4 2 2 <1	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2	5 0 65 <1 1085 1189 1149 1397 3383 history2 2 2 2
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 ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	2 0 58 <1 973 1071 979 1327 3159 current 4 2 2 <1	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2 2 2 history1 0.5	5 0 65 <1 1085 1189 1149 1397 3383 history2 2 2 2 1
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 2060 225 >25 >20 imit/base	2 0 58 <1 973 1071 979 1327 3159 current 4 2 <1 current	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2 2 2 history1	5 0 65 <1 1085 1189 1149 1397 3383 history2 2 2 2 1 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 ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 0 58 <1 973 1071 979 1327 3159 <u>current</u> 4 2 <1 <u>current</u> 0.1	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2 2 2 history1 0.5	5 0 65 <1 1085 1189 1149 1397 3383 history2 2 2 2 1 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 225 220 220 1imit/base >22 20	2 0 58 <1 973 1071 979 1327 3159 <u>current</u> 4 2 <1 2 <1 <u>current</u> 0.1 6.4 17.6	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2 2 2 history1 0.5 5.0	5 0 65 <1 1085 1189 1149 1397 3383 history2 2 2 2 2 1 history2 0.5 5.3
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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <b>imit/base</b> >20 <b>imit/base</b> >20	2 0 58 <1 973 1071 979 1327 3159 <u>current</u> 4 2 <1 2 <1 <u>current</u> 0.1 6.4 17.6	8 0 57 <1 906 1008 1050 1260 3123 history1 3 2 2 2 <u>history1</u> 0.5 5.0 17.8	5 0 65 <1 1085 1189 1149 1397 3383 <b>history2</b> 2 2 2 2 1 <b>history2</b> 0.5 5.3 17.7



## **OIL ANALYSIS REPORT**





White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor	scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual	NONE NONE NONE NONE	NONE NONE NONE NONE	NONE NONE NONE	NONE NONE NONE
Precipitate Silt Debris Sand/Dirt Appearance Odor	scalar scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE	NONE
Silt Debris Sand/Dirt Appearance Odor	scalar scalar	*Visual	NONE	NONE		
Debris Sand/Dirt Appearance Odor	scalar				NONE	NONE
Sand/Dirt Appearance Odor		*Visual				
Appearance Odor	scalar		NONL	NONE	NONE	NONE
Odor		*Visual	NONE	NONE	NONE	NONE
	scalar	*Visual	NORML	NORML	NORML	NORML
	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	13.5	14.2	14.0
GRAPHS						
Ferrous Alloys						
iron	Å					
sesses chromium	Λ					
5 mickel	//					
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5						
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			$\geq$			
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0ct20/20 Mar1/21 Jan27/22	May4/23	Sep30/23	Dec27/23			
Non-ferrous Metals						
copper						
neesseeseeseelead						
tin						
6						
2	-					
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0ct20/20 Mar1/21 Jan27/22	May4/23	Sep 30/23	Dec27/23			
) 7		Sep	Dec			
Viscosity @ 100°C				Base Number		
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8 - Abnormal 7-	$\wedge$		(B)HOX Bw)-		$\langle \rangle$	
8 - Abnormal 7 - 6 Base			0.8 0 0.0 KOH/(0) mper (m8		$\backslash$	
17-	$\bigwedge$		KOH		$\backslash$	

0.0

0ct20/20

Mar1/21.

Jan27/22 -



 Certificate 12367
 Test Package
 : FLEET

 To discuss this sample report, contact Customer Service at 1-800-237-1369.
 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.
 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Jan27/22

May4/23 -

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Recieved

Diagnosed

Sep30/23.

Diagnostician : Wes Davis

Dec27/23 -

: 29 Dec 2023

: 02 Jan 2024

Mar1/21.

12-11-

Unique Number : 10808852

Laboratory

Sample No.

Lab Number

0ct20/20

: GFL0101299

: 06048244

Submitted By: TECHNICIAN ACCOUNT

Mav4/23

GFL Environmental - 654 - Richmond Hauling

Sep 30/23 -

11800 Lewis Road

Contact: Jimmy Mayes

jmayes@gflenv.com

Chester, VA

US 23831

Dec27/23

T:

F: