

### **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 920096-260369

#### 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

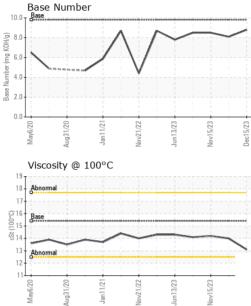
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date Client Info 15 Dec 2023 27 Nov 2023 15 Nov 2023   Machine Age hrs Client Info 8944 8807 8711   Oil Age hrs Client Info 0 0 0 0   Oil Age hrs Client Info N/A N/A N/A Not Changd   Sample Status Image Client Info N/A N/A NA Not Changd   CONTAMINATION method limit/base current history1 history2   Fuel WC Method >0.2 NEG NEG NEG   Water WC Method >0.2 4 9 7   Chromium ppm ASTM D5185m >4 10 0 4   Nickel ppm ASTM D5185m >4 11 2 2   Itanium ppm ASTM D5185m >20 1 2 2   Itanium ppm ASTM D5185m 20 0 0 0	•		May2020 A	lug2020 Jan2021	Nov2022 Jun2023 Nov2023	Dec2023	
Sample Date Client Into 15 Dec 2023 27 Nov 2023 15 Nov 2023   Machine Age hrs Client Info 8944 8807 8711   Oil Age hrs Client Info 0 0 0 0   Sample Status Client Info N/A NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method imit/base current history1 history2   Fuel WC Method >5 <1.0	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 8944 8807 8711   Oil Age hrs Client Info 0 0 0   Oil Age hrs Client Info N/A N/A N/A Not Changd   Sample Status Imit/base current History1 History2   Fuel WC Method >5 <1.0 <1.0 <1.0   Water WC Method >0.2 NEG NEG NEG   Oll Age NeG NEG NEG NEG NEG   Norkel ppm ASTM D5185m >100 4 9 7   Chromium ppm ASTM D5185m >20 <1 <1 <1 <1 <1 <1 <1 S1	Sample Number		Client Info		GFL0102424	GFL0102541	GFL0098624
Oil Age hrs Client Info 0 0 0   Oil Changed Client Info NA NA NA NA No Changed   Sample Status Imit/base current history1 history2   Fuel WC Method >5 <1.0 <1.0   Water WC Method >0	Sample Date		Client Info		15 Dec 2023	27 Nov 2023	15 Nov 2023
Oli Changed Client Info N/A N/A Not Changed   Sample Status Image of the status Image of the status Normal Normal Normal   CONTAMINATION method limit/base current History1 History2   Fuel WC Method >5 <1.0	Machine Age	hrs	Client Info		8944	8807	8711
Sample Status NORMAL NORMAL NORMAL NORMAL   CONTAMINATION 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 NEG   Wear ppm ASTM 05165m >100 4 9 7   Chromium ppm ASTM 05165m >4 <1 0 <1   Nickel ppm ASTM 05165m >20 <1 2 2   Lead ppm ASTM 05165m >20 1 2 2   Lead ppm ASTM 05165m >20 1 2 2   Lead ppm ASTM 05165m >30 0 0 0   Vanadium ppm ASTM 05165m 0 0 0 2   Lead ppm <td< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></td<>	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION 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 NEG   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM D5185m >100 4 9 7   Chromium ppm ASTM D5185m >20 <1 <1 <1   Nickel ppm ASTM D5185m >3 0 0 <1 <1 <1   Silver ppm ASTM D5185m >30 6 <1 <1 <1 <1   Tin ppm ASTM D5185m >15 0 0 0 <1   Copper ppm ASTM D5185m 0 11 1 <1   Barium ppm ASTM D5185m 0<	Oil Changed		Client Info		N/A	N/A	Not Changd
Fuel WC Method >5 <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG   Glycol WC Method Imit/base current history1 history2   Iron ppm ASTM 05185m >100 4 9 7   Chromium ppm ASTM 05185m >20 <1 <1 <1   Nickel ppm ASTM 05185m >20 <1 <1 <1   Silver ppm ASTM 05185m >3 0 0 <1   Silver ppm ASTM 05185m >3 0 0 <1   Copper ppm ASTM 05185m >30 6 <1 <1   Copper ppm ASTM 05185m >15 0 0 0   Vanadium ppm ASTM 05185m 0 11 1 <1   Boron ppm ASTM 05185m 0 11 1 <1   Magnasee ppm ASTM 05185m 0 41 0	CONTAMINATI	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG NEG   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM D5185m >100 4 9 7   Chromium ppm ASTM D5185m >20 <1 <1 <1   Nickel ppm ASTM D5185m >4 <1 0 <1   Nickel ppm ASTM D5185m >20 1 2 2   Lead ppm ASTM D5185m >20 1 2 2   Lead ppm ASTM D5185m >15 0 0 0   Vanadium ppm ASTM D5185m 0 <11 1 <1   Stand D5185m 0 111 1 <1 <1   ASTM D5185m 0 111 1 <1 <1   Barium ppm ASTM D5185m 0 <1 0 1   Magnesium <td< th=""><th>Fuel</th><th></th><th>WC Method</th><th>&gt;5</th><th>&lt;1.0</th><th>&lt;1.0</th><th>&lt;1.0</th></td<>	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2   Iron ppm ASTM D5185m >20 <1 <1 <1   Nickel ppm ASTM D5185m >20 <1 <1 <1   Nickel ppm ASTM D5185m >20 <1 <1 <1   Silver ppm ASTM D5185m >3 0 0 <1   Ead ppm ASTM D5185m >3 0 0 <1   Copper ppm ASTM D5185m >3 0 0 <1   Lead ppm ASTM D5185m >330 6 <1 <1   Copper ppm ASTM D5185m 0 0 0 <1   Chamium ppm ASTM D5185m 0 11 1 <1   Boron ppm ASTM D5185m 0 <1 0 <1   Barium ppm ASTM D5185m 100 <1 0 <t< th=""><th>Water</th><th></th><th>WC Method</th><th>&gt;0.2</th><th>NEG</th><th>NEG</th><th>NEG</th></t<>	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >100 4 9 7   Chromium ppm ASTM D5185m >20 <1 <1 <1   Nickel ppm ASTM D5185m >4 <1 0 <1   Silver ppm ASTM D5185m >3 0 0 0   Aluminum ppm ASTM D5185m >30 0 0 <1   Aluminum ppm ASTM D5185m >30 6 <1 <1   Copper ppm ASTM D5185m >40 0 0 0 <1   Cadmium ppm ASTM D5185m >330 6 <1 <1 <1 <1   Cadmium ppm ASTM D5185m 0 11 1 <1 <1   Boron ppm ASTM D5185m 0 11 5 9 <1   Molybdenum ppm ASTM D5185m 0 <1 0 <1 <1 <1 <1<	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 <1	Iron	ppm	ASTM D5185m	>100	4	9	7
Titanium ppm ASTM D5185m 0 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Titanium ppm ASTM D5185m 0 <1	Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Aluminum ppm ASTM D5185m >20 1 2 2   Lead ppm ASTM D5185m >40 0 0 <1   Copper ppm ASTM D5185m >330 6 <1 <1   Tin ppm ASTM D5185m >15 0 0 0   Vanadium ppm ASTM D5185m 0 0 0 0   Cadmium ppm ASTM D5185m 0 11 1 <1   ADDITIVES method limit/base current history1 history2   Boron ppm ASTM D5185m 0 11 1 <1   Barium ppm ASTM D5185m 0 <1 5 9   Molybdenum ppm ASTM D5185m 0 <1 0 <1   Magnessum ppm ASTM D5185m 1070 1053 1056 1033   Phosphorus ppm ASTM D5185m 11270 1181 <t< th=""><th>Titanium</th><th>ppm</th><th>ASTM D5185m</th><th></th><th>0</th><th>&lt;1</th><th>&lt;1</th></t<>	Titanium	ppm	ASTM D5185m		0	<1	<1
Aluminum ppm ASTM D5185m >20 1 2 2   Lead ppm ASTM D5185m >40 0 0 <1   Copper ppm ASTM D5185m >330 6 <1 <1   Tin ppm ASTM D5185m >15 0 0 0   Vanadium ppm ASTM D5185m 0 0 0 0   Cadmium ppm ASTM D5185m 0 11 1 <1   ADDITIVES method limit/base current history1 history2   Boron ppm ASTM D5185m 0 11 1 <1   Barium ppm ASTM D5185m 0 <1 5 9   Molybdenum ppm ASTM D5185m 0 <1 0 <1   Magnesium ppm ASTM D5185m 1070 1053 1056 1033   Phosphorus ppm ASTM D5185m 1150 1037 <td< th=""><th>Silver</th><th></th><th>ASTM D5185m</th><th>&gt;3</th><th>0</th><th>0</th><th></th></td<>	Silver		ASTM D5185m	>3	0	0	
Lead ppm ASTM D5185m >40 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	1	2	2
Copper ppm ASTM D5185m >330 6 <1	Lead		ASTM D5185m	>40	0	0	<1
Tin ppm ASTM D5185m<>15 0 0 0   Vanadium ppm ASTM D5185m 0 0 0   Cadmium ppm ASTM D5185m 0 0 0 <1	Copper		ASTM D5185m	>330	6	<1	<1
Vanadium ppm ASTM D5185m 0 0 0   Cadmium ppm ASTM D5185m 0 0 <1	Tin						
Cadmium ppm ASTM D5185m 0 0 <1	Vanadium		ASTM D5185m			0	0
Boron ppm ASTM D5185m 0 11 1 <1	Cadmium					0	<1
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 65 60 61   Manganese ppm ASTM D5185m 0 <1 0 <1   Magnesium ppm ASTM D5185m 1010 871 874 895   Calcium ppm ASTM D5185m 1070 1053 1056 1033   Phosphorus ppm ASTM D5185m 1070 1037 969 1019   Zinc ppm ASTM D5185m 1270 1181 1140 1183   Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >20 <1 4 3   INFRA-RED method imit/base current history1 history2   Soot % % *ASTM D7844 <	Boron	ppm	ASTM D5185m	0	11	1	<1
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m	0	<1	5	9
Manganese ppm ASTM D5185m 0 <1	Molybdenum	ppm	ASTM D5185m	60	65	60	61
Calcium ppm ASTM D5185m 1070 1053 1056 1033   Phosphorus ppm ASTM D5185m 1150 1037 969 1019   Zinc ppm ASTM D5185m 1270 1181 1140 1183   Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m 225 4 2 3   Sodium ppm ASTM D5185m >25 4 0 3   Potassium ppm ASTM D5185m >20 <1 4 3   INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/.tmm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.tmm *ASTM D7415 <th>Manganese</th> <th>ppm</th> <th>ASTM D5185m</th> <th>0</th> <th>&lt;1</th> <th>0</th> <th>&lt;1</th>	Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus ppm ASTM D5185m 1150 1037 969 1019   Zinc ppm ASTM D5185m 1270 1181 1140 1183   Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >25 4 0 3   Potassium ppm ASTM D5185m >20 <1 4 3   INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.tmm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limi	Magnesium	ppm	ASTM D5185m	1010	871	874	895
Zinc ppm ASTM D5185m 1270 1181 1140 1183   Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >25 4 0 3   Potassium ppm ASTM D5185m >20 <1 4 3   INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.tmm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.tmm *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1053	1056	1033
Zinc ppm ASTM D5185m 1270 1181 1140 1183   Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >25 4 0 3   Potassium ppm ASTM D5185m >20 <1 4 3   INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.tmm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.tmm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	1037	969	1019
Sulfur ppm ASTM D5185m 2060 3044 2979 3113   CONTAMINANTS method limit/base current history1 history2   Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >25 4 0 3   Potassium ppm ASTM D5185m >20 <1	Zinc		ASTM D5185m	1270	1181	1140	1183
Silicon ppm ASTM D5185m >25 4 2 3   Sodium ppm ASTM D5185m >20 4 0 3   Potassium ppm ASTM D5185m >20 <1	Sulfur		ASTM D5185m	2060	3044	2979	3113
Sodium ppm ASTM D5185m 4 0 3   Potassium ppm ASTM D5185m<>20 <1 4 3   INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844<>3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624<>20 5.1 6.7 6.4   Sulfation Abs/.1mm *ASTM D7415<>30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414<>25 13.4 14.4 14.3	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1	Silicon	ppm	ASTM D5185m	>25	4	2	3
INFRA-RED method limit/base current history1 history2   Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.1mm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	Sodium	ppm	ASTM D5185m		4	0	3
Soot % % *ASTM D7844 >3 0.2 0.5 0.4   Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.1mm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	Potassium	ppm	ASTM D5185m	>20	<1	4	3
Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.1mm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 5.1 6.7 6.4   Sulfation Abs/.1mm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	Soot %	%	*ASTM D7844	>3	0.2	0.5	0.4
Sulfation Abs/.1mm *ASTM D7415 >30 17.7 19.1 19.1   FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	Nitration	Abs/cm	*ASTM D7624	>20			6.4
Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.4 14.3	Sulfation						
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.4	14.4	14.3
	Base Number (BN)						



## **OIL ANALYSIS REPORT**

VISUAL



White Metal						NONE
	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	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.1	14.0	14.2
GRAPHS						
Ferrous Alloys						
40 35						
30						
25						
틆 20						
15						
10						
5		$\overline{}$				
0			and the second se			
20						
ay6.	21/2	13/2	c15/23			
May6/20 Aug31/20 Jan11/21	Nov21/22	Jun13/23 Nov15/23	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Jun13/2	Dec15/23			
Non-ferrous Metal	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metal	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Nav15/2	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metals	_	Jun13/2 Nov15/2	Dec15/23			
Non-ferrous Metals			/			
Non-ferrous Metals			/			
Non-ferrous Metals	_	Jun 13/23	Deci5/23 Deci5/23			
Non-ferrous Metals			Dec15/23	Base Numbe	r	
Non-ferrous Metals			Dec15/23	Base Numbe	<b>r</b>	
Non-ferrous Metals			0.01	Base Numbe	r A	
Non-ferrous Metals			0.01	Base Numbe	r A A	
Non-ferrous Metals			0.01	Base Numbe	r	
Non-ferrous Metals			0.01	Base Numbe	r	
Non-ferrous Metals			0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Base Numbe	r	
Non-ferrous Metals			0.01 per (wa KOH(6)	Base Numbe	r	
Non-ferrous Metals		Juni 3/23 Movi5/23 Movi5/23	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		$\bigwedge$	
Non-ferrous Metals			10.0 (0)(HO) Bull Jack Hole Base group 4.0 2.0	Base Numbe	$\bigwedge$	Juni 3/12 Novi 5/12





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

Recieved

Diagnosed

Diagnostician : Wes Davis

: 22 Dec 2023

: 27 Dec 2023

: GFL0102424

: 06043835

Sample No.

Lab Number

Unique Number : 10804443