

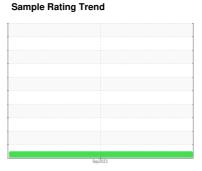
OIL ANALYSIS REPORT



{UNASSIGNED} 913176 Component

Diesel Engine

PETRO CANADA 15W40 (10 GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

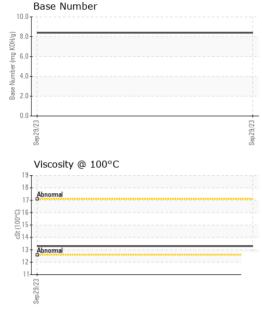
Fluid Condition

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

SAMPLE INFORMATION method limit/base current history1 history2	iu (Iu GAL)				Sep2023		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 Oil Changed Client Info 0 Sample Status NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 Nickel ppm ASTM D5185m >20 <1	Sample Number		Client Info		GFL0080535		
Oil Age hrs Client Info Changed	Sample Date		Client Info		29 Sep 2023		
Contact	Machine Age	hrs	Client Info		0		
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		0		
CONTAMINATION method imit/base current history1 history2	Oil Changed		Client Info		Changed		
Fuel					NORMAL		
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0		
Iron	Glycol		WC Method		NEG		
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	17		
Titanium	Chromium	ppm	ASTM D5185m	>20	<1		
Silver	Nickel	ppm	ASTM D5185m	>5	1		
Aluminum	Titanium	ppm	ASTM D5185m	>2	0		
Aluminum	Silver	ppm	ASTM D5185m	>2	<1		
Lead	Aluminum	ppm	ASTM D5185m	>20	3		
Copper ppm ASTM D5185m >330 11 Tin ppm ASTM D5185m >15 1 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 66 Manganese ppm ASTM D5185m 939 Magnesium ppm ASTM D5185m 1051 Calcium ppm ASTM D5185m 1006 Phosphorus ppm ASTM D5185m 2950 Sulfur ppm ASTM D5185m 295	Lead		ASTM D5185m	>40	0		
Tin	Copper		ASTM D5185m	>330	11		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 66 Manganese ppm ASTM D5185m 939 Magnesium ppm ASTM D5185m 1051 Calcium ppm ASTM D5185m 1006 Phosphorus ppm ASTM D5185m 1227 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185m >20 6<					1		
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 66 Manganese ppm ASTM D5185m 939 Magnesium ppm ASTM D5185m 1051 Calcium ppm ASTM D5185m 1006 Phosphorus ppm ASTM D5185m 1227 Sulfur ppm ASTM D5185m 2950 Sulfur ppm ASTM D5185m 225 10 Sodium ppm ASTM D5185m 22 Sodium ppm ASTM D5185m 20 6					0		
Boron					-		
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 66 Manganese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 939 Calcium ppm ASTM D5185m 1051 Phosphorus ppm ASTM D5185m 1006 Zinc ppm ASTM D5185m 2950 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 22 Sodium ppm ASTM D5185m 20 6 Potassium ppm ASTM D5185m 20 6 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 >20	Boron	ppm	ASTM D5185m		10		
Manganese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 939 Calcium ppm ASTM D5185m 10051 Phosphorus ppm ASTM D5185m 1006 Zinc ppm ASTM D5185m 2950 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/amm <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td></td> <td></td>	Barium	ppm	ASTM D5185m		0		
Manganese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 939 Calcium ppm ASTM D5185m 1006 Phosphorus ppm ASTM D5185m 1227 Zinc ppm ASTM D5185m 2950 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/:1mm <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>66</td> <td></td> <td></td>	Molybdenum	ppm	ASTM D5185m		66		
Magnesium ppm ASTM D5185m 939 Calcium ppm ASTM D5185m 1051 Phosphorus ppm ASTM D5185m 1006 Zinc ppm ASTM D5185m 1227 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRA	-	ppm	ASTM D5185m		<1		
Calcium ppm ASTM D5185m 1051 Phosphorus ppm ASTM D5185m 1006 Zinc ppm ASTM D5185m 1227 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5	-		ASTM D5185m		939		
Phosphorus ppm ASTM D5185m 1006 Zinc ppm ASTM D5185m 1227 Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history			ASTM D5185m		1051		
Zinc							
Sulfur ppm ASTM D5185m 2950 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5							
Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	-						
Sodium ppm ASTM D5185m 2 Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	Silicon	ppm	ASTM D5185m	>25	10		
INFRA-RED	Sodium	ppm	ASTM D5185m		2		
Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	Potassium	ppm	ASTM D5185m	>20	6		
Nitration Abs/cm *ASTM D7624 >20 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	Soot %	%	*ASTM D7844	>4	0.4		
Sulfation Abs/.1mm *ASTM D7415 >30 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5	Nitration	Abs/cm	*ASTM D7624	>20	7.6		
Oxidation			*ASTM D7415				
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5		
	Base Number (BN)				8.4		



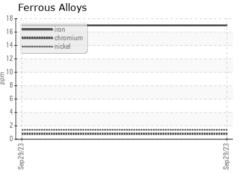
OIL ANALYSIS REPORT



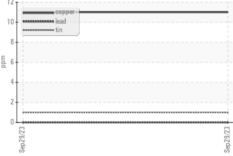
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
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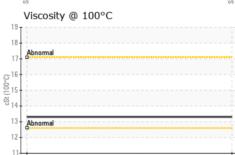
I LOID I NOI	LITTLO	method		Thistory i	Historyz
Visc @ 100°C	cSt	ASTM D445	13.3		

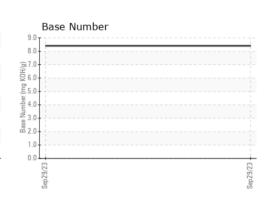
GRAPHS



Non-ferrous Metals











Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10672573 Test Package : FLEET

: GFL0080535 : 05966022

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 02 Oct 2023 : 02 Oct 2023

Diagnosed Diagnostician : Wes Davis GFL Environmental - 018 - Fayetteville

4621 Marracco Drive Hope Mills, NC US 28348

Contact: Robert Carter robert.carter@gflenv.com T: (910)596-1170

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)