

OIL ANALYSIS REPORT

Sample Rating Trend



Fluid

(YA156362) 411013 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (44 QTS)





Sample Number Client Info GFL0098141 GFL0088502 GGL008101 Mixed Nixed Nixed <th></th> <th></th> <th></th> <th></th> <th>J22 May2022 Dec2022 Apr2023 Ar</th> <th></th> <th></th>					J22 May2022 Dec2022 Apr2023 Ar		
Sample Date Client Info 06 Feb 2024 04 Jan 2024 22 Aug 202 Machine Age hrs Client Info 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 3085 <td< td=""><td>SAMPLE INFOR</td><td>RMATION</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></td<>	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 3085 3085 3085 Oil Age hrs Client Info V/A N/A N/A Sample Status Immibbase current History1 History1 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0098141	GFL0088502	GFL0088552
Oil Age hrs Client Info 224 586 407 Oil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history1 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		06 Feb 2024	04 Jan 2024	22 Aug 2023
Oil Changed Client Info N/A N/A N/A N/A Sample Status Image: Constraint of the status Image: Constraint of the status NORMAL NORMAL CONTAMINATION method Imit/base current History1 History1 Fuel WC Method >3.0 <1.0	Machine Age	hrs	Client Info		3085	3085	3085
Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0	Oil Age	hrs	Client Info		224	586	407
CONTAMINATION method limit/base current history1 history1 Fuel WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG Wear WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 2 8 8 Chromium ppm ASTM D5185m >20 <1	Oil Changed		Client Info		N/A	N/A	N/A
Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 NEG	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG Wear ppm ASTM D5185m >120 2 8 8 Chromium ppm ASTM D5185m >20 <1	CONTAMINA	TION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WeAR METALS method imit/base current history1 history1 Iron ppm ASTM 05185m >120 2 8 8 Chromium ppm ASTM 05185m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol WC Method NEG NEG NEG WeAR METALS method imit/base current history1 history1 Iron ppm ASTM 05185m >120 2 8 8 Chromium ppm ASTM 05185m >20 <1	Water		WC Method	>0.2		NEG	NEG
Iron ppm ASTM D5185m >120 2 8 8 Chromium ppm ASTM D5185m >20 <1							
Iron ppm ASTM D5185m >120 2 8 8 Chromium ppm ASTM D5185m >20 <1	-	LS	method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >15 0 <1					2		
Nickel ppm ASTM D5185m >15 0 <1 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >40 0 <1							
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >40 0 <1							
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >40 0 <1							
Aluminum ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >40 0 <1							
Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 <1							
Copper ppm ASTM D5185m >330 <1 5 1 Tin ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 6 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1							
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Boron ppm ASTM D5185m 0 4 6 6 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 59 88 Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 59 88 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 943 904 1395 Calcium ppm ASTM D5185m 1010 943 904 1395 Calcium ppm ASTM D5185m 1070 957 1127 1615 Phosphorus ppm ASTM D5185m 1150 1069 1023 1532 Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 58 59 88 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0		6	
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 943 904 1395 Calcium ppm ASTM D5185m 1070 957 1127 1615 Phosphorus ppm ASTM D5185m 1070 957 1127 1615 Phosphorus ppm ASTM D5185m 1150 1069 1023 1532 Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m<>25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 20 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 943 904 1395 Calcium ppm ASTM D5185m 1070 957 1127 1615 Phosphorus ppm ASTM D5185m 1150 1069 1023 1532 Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7844 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D74	Molybdenum	ppm	ASTM D5185m	60	58	59	88
Calcium ppm ASTM D5185m 1070 957 1127 1615 Phosphorus ppm ASTM D5185m 1150 1069 1023 1532 Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/.1mm *ASTM D7415	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1069 1023 1532 Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/1mm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/1mm *ASTM D7415	Magnesium	ppm	ASTM D5185m	1010	943	904	1395
Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.tmm<*ASTM D7415	Calcium	ppm	ASTM D5185m	1070	957	1127	1615
Zinc ppm ASTM D5185m 1270 1255 1247 1864 Sulfur ppm ASTM D5185m 2060 3044 2929 4909 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.tmm<*ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current	Phosphorus	ppm	ASTM D5185m	1150	1069	1023	1532
SulfurppmASTM D5185m2060304429294909CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25356SodiumppmASTM D5185m>20122PotassiumppmASTM D5185m>20147INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.20.30.2NitrationAbs/cm*ASTM D7624>206.28.56.7SulfationAbs/1mm*ASTM D7415>3018.219.818.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.016.014.2			ASTM D5185m	1270	1255	1247	1864
Silicon ppm ASTM D5185m >25 3 5 6 Sodium ppm ASTM D5185m <1 2 2 Potassium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.imm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 >25 14.0 16.0 14.2							
Sodium ppm ASTM D5185m <1 2 2 Potassium ppm ASTM D5185m<>20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	Silicon	ppm	ASTM D5185m	>25	3	5	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	Sodium	ppm	ASTM D5185m		<1	2	2
Soot % % *ASTM D7844 >4 0.2 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	Potassium	ppm	ASTM D5185m	>20	1	4	7
Nitration Abs/cm *ASTM D7624 >20 6.2 8.5 6.7 Sulfation Abs/.1mm *ASTM D7615 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2	Soot %	%	*ASTM D7844	>4	0.2	0.3	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.8 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2				>20			
Oxidation Abs/.1mm *ASTM D7414 >25 14.0 16.0 14.2							
	FLUID DEGRA		method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.0	16.0	14.2
	Base Number (BN)				8.6	7.8	8.3

Recommendation Resample at the next service interval to more

Wear

All component wear rates are normal.

Contamination

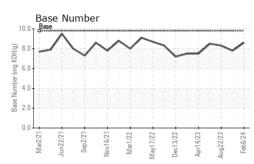
There is no indication of any contamination oil.

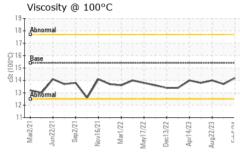
Fluid Condition

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

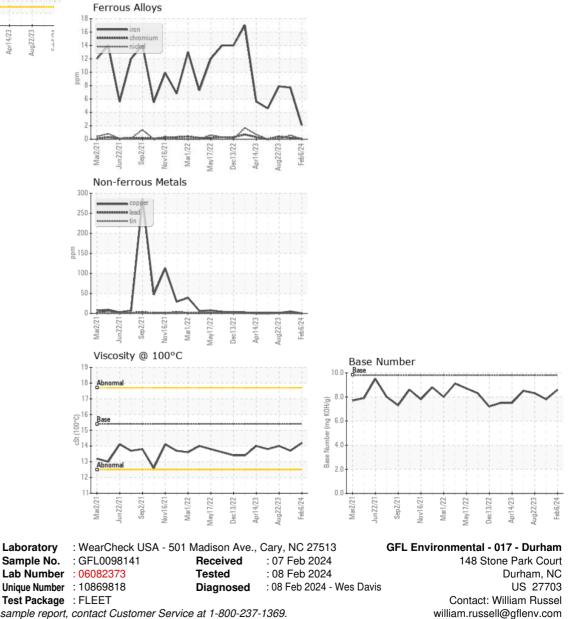


OIL ANALYSIS REPORT





VISUAL		method				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
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	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	13.7	14.0
GRAPHS						





Test Package : FLEET Certificate L2367 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) F: (919)598-1852

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