

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id 924035-205291

Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- LTR)

Sample Number Client Info GFL0092576 GFL0081540 GFL007195 Sample Date I info 13 Sep 2023 09 May 2023 06 Mar 2023 Machine Age hrs Client Info 3233 2397 1877 Oil Age hrs Client Info 3233 2397 1877 Oil Changed Client Info GMachine Changed Not Changed Not Changed Cilent Info Client Info Changed Changed Not Changed Not Changed Gloval Client Info Changed NorRMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Chromium ppm ASTM 05185m >20 3 24 21 Chromium ppm ASTM 05185m >20 1 1 5 Itrianum ppm ASTM 05185m >20 1 1 1	N SHP 15W40 (-	LTR)	May2021	Jul2021 Dec2021 Feb202	2 Apr2022 Mar2023 May2023	Sep2023	
Sample Date Client Into 13 Sep 2023 09 May 2023 06 Mar 2023 Machine Age hrs Client Info 3233 2397 1877 Oil Age hrs Client Info 600 600 600 600 Sample Status Client Info Changed Changed NoRMAL	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 3233 2397 1877 Oil Age irrs Client Info 600 <t< td=""><td>Sample Number</td><td></td><td>Client Info</td><td></td><th>GFL0092576</th><td>GFL0081540</td><td>GFL0071957</td></t<>	Sample Number		Client Info		GFL0092576	GFL0081540	GFL0071957
Oil Age Inrs Client Info 600 600 600 600 Oil Changed Client Info Changed NoRMAL NORMAL <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>13 Sep 2023</th> <td>09 May 2023</td> <td>06 Mar 2023</td>	Sample Date		Client Info		13 Sep 2023	09 May 2023	06 Mar 2023
Dil Changed Sample StatusClient InfoChanged NORMALNor Changed NORMALNor Changed NORMALNor Changed NORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC Method>3.0<1.0	Machine Age	hrs	Client Info		3233	2397	1877
Dil Changed Sample StatusClient InfoChanged NORMALNor Changed NORMALNor Changed NORMALNor Changed NORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC Method>3.0<1.0	Oil Age	hrs	Client Info		600	600	600
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0	-				Changed	Changed	Not Changd
Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 <1 <1 1 Nickel ppm ASTM D5185m >2 <1 <1 1 Silver ppm ASTM D5185m >2 0 0 0 Auminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 <1 2 1 Vanadium ppm ASTM D5185m >15 1 <1 0 <1 Vanadium ppm ASTM D5185m 0 3 4 7 Barium ppm ASTM D5185m 0 3 4	-				-		
Glycol WC Method NEG NEG NEG NEG WARA METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 41 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 3 24 21 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Iron ppm ASTM D5185m >120 3 24 21 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		-	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >5 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 <1 <1 1 Titanium ppm ASTM D5185m >2 <1	ron	ppm	ASTM D5185m	>120	3	24	21
Titanium ppm ASTM D5185m >2 <1 <1 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >330 <1	Nickel	ppm	ASTM D5185m	>5	<1	<1	1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 <1	Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Auminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 <1	Silver		ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 <1 2 1 Copper ppm ASTM D5185m >330 <1	Aluminum		ASTM D5185m	>20	1	1	5
Copper ppm ASTM D5185m >330 <1 2 1 Tin ppm ASTM D5185m >15 1 <1	Lead				<1	2	
Tin ppm ASTM D5185m >15 1 <1 <1 <1 <1 Vanadium ppm ASTM D5185m <1 <1 0 0 Cadmium ppm ASTM D5185m <1 <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 4 7 Barium ppm ASTM D5185m 0 0 0 0 0 2 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <10 969 803 630 Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 150 1072 906 800 Sulfur ppm ASTM D5185m 150 1072 906 800			ASTM D5185m	>330	<1	2	1
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 4 7 Barium ppm ASTM D5185m 0 0 0 0 2 Boron ppm ASTM D5185m 0 0 0 0 2 Barium ppm ASTM D5185m 0 60 61 56 53 Maganese ppm ASTM D5185m 0 <11 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 969 803 630 Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m							<1
Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 4 7 Barium ppm ASTM D5185m 0 0 0 0 0 2 Magnesium ppm ASTM D5185m 0 61 56 53 Magnesium ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 969 803 630 <20 Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANT							
Boron ppm ASTM D5185m 0 3 4 7 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 61 56 53 Manganese ppm ASTM D5185m 0 <1	Cadmium						<1
Barium ppm ASTM D5185m 0 0 0 0 2 Molybdenum ppm ASTM D5185m 60 61 56 53 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 61 56 53 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	3	4	7
Maganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 969 803 630 Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 1150 1072 906 800 Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	2
Magnesium ppm ASTM D5185m 1010 969 803 630 Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 1150 1072 906 800 Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D741	Molybdenum	ppm	ASTM D5185m	60	61	56	53
Calcium ppm ASTM D5185m 1070 1205 1250 1313 Phosphorus ppm ASTM D5185m 1150 1072 906 800 Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 22 8 6 Sodium ppm ASTM D5185m 20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.tmm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base	Vanganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1072 906 800 Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 5 8 6 Sodium ppm ASTM D5185m 22 8 8 Potassium ppm ASTM D5185m 20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.tmm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base <td< td=""><td>Vagnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>969</th><td>803</td><td>630</td></td<>	Vagnesium	ppm	ASTM D5185m	1010	969	803	630
Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.tmm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base	Calcium	ppm	ASTM D5185m	1070	1205	1250	1313
Zinc ppm ASTM D5185m 1270 1283 1176 1006 Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.tmm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 12.6 20.4 21.9	Phosphorus	ppm	ASTM D5185m	1150	1072	906	800
Sulfur ppm ASTM D5185m 2060 3800 3040 2315 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414			ASTM D5185m	1270	1283	1176	1006
Silicon ppm ASTM D5185m >25 5 8 6 Sodium ppm ASTM D5185m 2 8 8 8 Potassium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Sulfur				3800	3040	2315
Sodium ppm ASTM D5185m 2 8 8 Potassium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 4 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Silicon	ppm	ASTM D5185m	>25	5	8	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Sodium	ppm	ASTM D5185m		2	8	8
Soot % % *ASTM D7844 >4 0.1 0.6 0.9 Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Potassium	ppm	ASTM D5185m	>20	4	4	7
Nitration Abs/cm *ASTM D7624 >20 6.1 9.7 10.9 Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.2 23.4 23.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Soot %	%	*ASTM D7844	>4	0.1	0.6	0.9
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Nitration	Abs/cm	*ASTM D7624	>20	6.1	9.7	10.9
Oxidation Abs/.1mm *ASTM D7414 >25 12.6 20.4 21.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.2	23.4	23.8
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.6 6.5 6.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.6	20.4	21.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.6	6.5	6.4

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

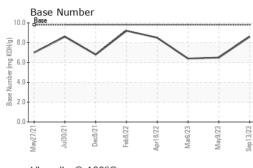
There is no indication of any contamination in the oil.

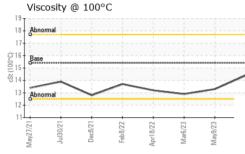
Fluid Condition

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

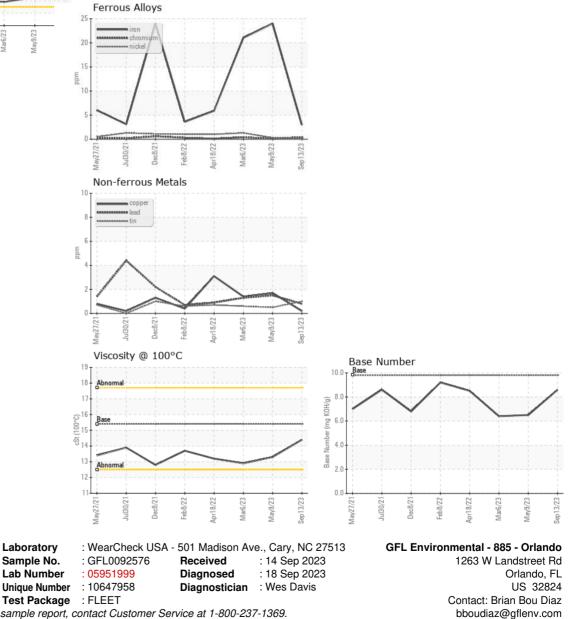


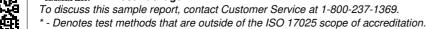
OIL ANALYSIS REPORT





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
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	14.4	13.3	12.9
GRAPHS						





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

Certificate L2367

Т:

F: