

OIL ANALYSIS REPORT

Sample Rating Trend

May2022 Dec2022 May2023 Jul2023 Sep2023 Dec2023 Feb2024





929064-192616

Component

Diesel Engine

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

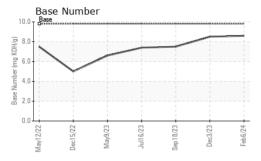
Fluid Condition

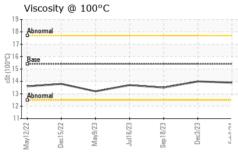
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 history2	LTR)		May2022	Dec2022 May2023	Jul2023 Sep2023 Dec2023	Feb2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0106126	GFL0082073	GFL0078662
Oil Age hrs Client Info 600 0 600 Oil Changed Changed Changed Changed Changed Changed Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0			Client Info		06 Feb 2024	03 Dec 2023	18 Sep 2023
Changed Changed Changed NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		13965	13481	12939
Sample Status	Oil Age	hrs	Client Info		600	0	600
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >110 28 21 11 Chromium ppm ASTM D5185m >4 2 <1 0 Nickel ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 <1 2 2 Lead ppm ASTM D5185m >45 1 <1 2 2 Copper ppm ASTM D5185m >4 <1 0 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 2	CONTAMINAT	ION	method	limit/base	current	history1	history2
Silycol WC Method NEG NEG NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 2 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>110	28	21	11
Titanium	Chromium	ppm	ASTM D5185m	>4	2	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0
Lead ppm ASTM D5185m >45 1 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >85 2 <1	Aluminum	ppm	ASTM D5185m	>25	<1	2	2
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>45	1	<1	2
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>85	2	<1	<1
Cadmium ppm ASTM D5185m <1	Tin	ppm	ASTM D5185m	>4	<1	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 69 61 66 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	9	5	6
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m	0	0	2	0
Magnesium ppm ASTM D5185m 1010 1042 901 913 Calcium ppm ASTM D5185m 1070 1134 1090 1083 Phosphorus ppm ASTM D5185m 1150 1016 951 1000 Zinc ppm ASTM D5185m 1270 1346 1197 1221 Sulfur ppm ASTM D5185m 2060 2994 4384 3370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m >0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7414 >3 1.7 1.5 0.6 Nitration Abs/.1mm *ASTM D7415 <	Molybdenum	ppm				61	66
Calcium ppm ASTM D5185m 1070 1134 1090 1083 Phosphorus ppm ASTM D5185m 1150 1016 951 1000 Zinc ppm ASTM D5185m 1270 1346 1197 1221 Sulfur ppm ASTM D5185m 2060 2994 4384 3370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m >0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7414	Manganese	ppm	ASTM D5185m			0	<1
Phosphorus ppm ASTM D5185m 1150 1016 951 1000 Zinc ppm ASTM D5185m 1270 1346 1197 1221 Sulfur ppm ASTM D5185m 2060 2994 4384 3370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base <th>-</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th></th> <th></th> <th></th>	-	ppm	ASTM D5185m				
Zinc ppm ASTM D5185m 1270 1346 1197 1221 Sulfur ppm ASTM D5185m 2060 2994 4384 3370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414		ppm	ASTM D5185m	1070			
Sulfur ppm ASTM D5185m 2060 2994 4384 3370 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1	-						
Silicon ppm ASTM D5185m >30 5 3 5 Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1			ASTM D5185m	2060	2994	4384	3370
Sodium ppm ASTM D5185m 0 2 5 Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 6 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1				>30			
INFRA-RED		ppm					
Soot % % *ASTM D7844 >3 1.7 1.5 0.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1	Potassium	ppm	ASTM D5185m	>20	2	6	1
Nitration Abs/cm *ASTM D7624 >20 7.4 8.5 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.8 20.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1							
Oxidation Abs/.1mm *ASTM D7414 >25 13.8 15.2 16.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.0	21.8	20.6
	FLUID DEGRA	NOITAC	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.6 8.5 7.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	15.2	16.1
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.6	8.5	7.5



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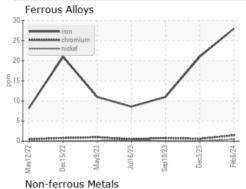


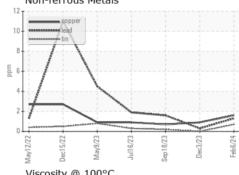


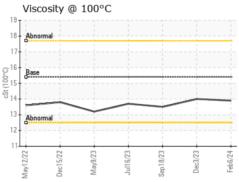
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

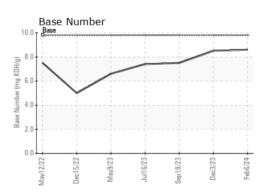
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0	13.5

GRAPHS











Laboratory Sample No.

Lab Number : 06085305

Unique Number : 10872750 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0106126 Received : 09 Feb 2024 : 12 Feb 2024

Tested Diagnosed

: 12 Feb 2024 - Wes Davis

GFL Environmental - 152 - Jacksonville 7580 PHILIPS HWY

Jacksonville, FL US 32256

Contact: Chris Smith

chris.smith@gflenv.com T: (904)252-0013

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)