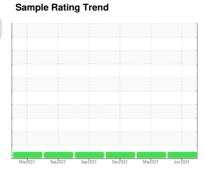


OIL ANALYSIS REPORT



712062 Component

Diesel Engine PETRO CANADA DURON SHP 15W40 (--- 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

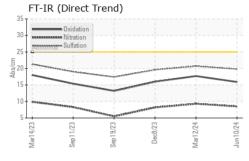
Fluid Condition

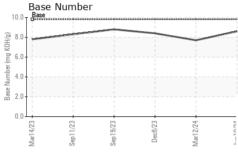
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

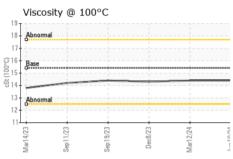
Sample Date	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 600	Sample Number		Client Info		GFL0121962	GFL0109003	GFL0096878
Oil Age hrs Client Info 600 600 600 Oil Changed	Sample Date		Client Info		10 Jun 2024	12 Mar 2024	08 Dec 2023
Oil Changed Client Info Changed NORMAL NORMAL NORMAL	Machine Age	nrs	Client Info		0	0	0
Client Info	Oil Age	nrs	Client Info		600	600	600
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	-		Client Info		Changed	Changed	Changed
Fuel					_		_
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 12 19 12 Chromium ppm ASTM D5185m >20 0 <1	CONTAMINATIO	N	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 12 19 12 Chromium ppm ASTM D5185m >20 0 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron p	opm	ASTM D5185m	>90	12	19	12
Titanium	Chromium p	opm	ASTM D5185m	>20	0	<1	<1
Titanium ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 1 2 Lead ppm ASTM D5185m >330 <1	Nickel p	opm	ASTM D5185m	>2	0	0	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 1 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 1 <1 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 4 <1 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 0 0 0 1 </td <td>Titanium p</td> <td>opm</td> <td>ASTM D5185m</td> <td>>2</td> <th>0</th> <td>0</td> <td><1</td>	Titanium p	opm	ASTM D5185m	>2	0	0	<1
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 1 <1 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 7 4 <1 Boron ppm ASTM D5185m 0 0 0 12 Boron ppm ASTM D5185m 0 0 0 12 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 0 0 0 12 Magnesium ppm ASTM D5185m 0 0 <1 <1 Calcium ppm ASTM D5185m 100 1047 978 97			ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 1 <1 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 7 4 <1 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 0 0 0 12 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 0 0 <1 <1 Calcium ppm ASTM D5185m 1010 942 937 956 Calcium ppm ASTM D5185m 100 1047 978	Aluminum r	opm	ASTM D5185m	>20	1	1	2
Copper ppm ASTM D5185m >330 <1 1 <1 Tin ppm ASTM D5185m >15 0 0 <1				>40	0	0	0
Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 4 <1			ASTM D5185m	>330	<1	1	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 4 <1 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 942 937 956 Calcium ppm ASTM D5185m 1070 1041 1040 1052 Phosphorus ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1					0		
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 4 <1							
Boron							
Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 942 937 956 Calcium ppm ASTM D5185m 1070 1041 1040 1052 Phosphorus ppm ASTM D5185m 1150 1047 978 971 Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current	Boron p	opm	ASTM D5185m	0	7	4	<1
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 942 937 956 Calcium ppm ASTM D5185m 1070 1041 1040 1052 Phosphorus ppm ASTM D5185m 1150 1047 978 971 Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D781	Barium p	opm	ASTM D5185m	0	0	0	12
Magnesium ppm ASTM D5185m 1010 942 937 956 Calcium ppm ASTM D5185m 1070 1041 1040 1052 Phosphorus ppm ASTM D5185m 1150 1047 978 971 Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION *ASTM D7414	Molybdenum	opm	ASTM D5185m	60	59	58	60
Calcium ppm ASTM D5185m 1070 1041 1040 1052 Phosphorus ppm ASTM D5185m 1150 1047 978 971 Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION *ASTM D7414 >25 15.9 17.7 16.0	Manganese p	opm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 1150 1047 978 971 Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Magnesium p	opm	ASTM D5185m	1010	942	937	956
Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D741	Calcium	opm	ASTM D5185m	1070	1041	1040	1052
Zinc ppm ASTM D5185m 1270 1254 1224 1216 Sulfur ppm ASTM D5185m 2060 3428 2835 3080 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D741	Phosphorus p	opm	ASTM D5185m	1150	1047	978	971
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 2 2 Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0		opm	ASTM D5185m	1270	1254	1224	1216
Silicon ppm ASTM D5185m >25 2 2 2 2 Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	Sulfur p	opm	ASTM D5185m	2060	3428	2835	3080
Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	Silicon p	opm	ASTM D5185m	>25	2	2	2
INFRA-RED	Sodium	opm	ASTM D5185m		4	5	0
Soot % % *ASTM D7844 >6 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	Potassium p	opm	ASTM D5185m	>20	1	0	3
Nitration Abs/cm *ASTM D7624 > 20 8.5 9.3 8.2 Sulfation Abs/.1mm *ASTM D7415 > 30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 15.9 17.7 16.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	Soot %	%	*ASTM D7844	>6	0.5	0.7	0.5
Sulfation Abs/.1mm *ASTM D7415 >30 19.8 20.7 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0	Nitration /	Abs/cm	*ASTM D7624	>20	8.5	9.3	8.2
Oxidation Abs/.1mm *ASTM D7414 >25 15.9 17.7 16.0				>30			
	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
	Oxidation A	Abs/.1mm	*ASTM D7414	>25	15.9	17.7	16.0
			ASTM D2896		8.6	7.7	8.4



OIL ANALYSIS REPORT



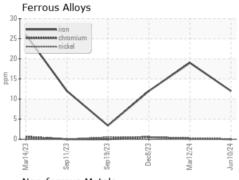


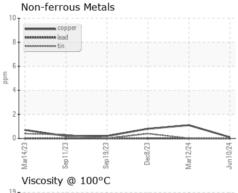


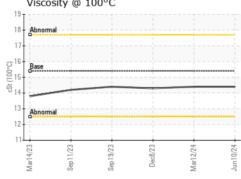
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

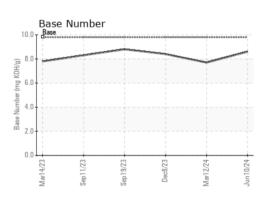
FLUID PROPE	ERITES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.4	14.4	14.3

GRAPHS













Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0121962 Lab Number : 06211250 Unique Number : 11084114

Received **Tested** Diagnosed

: 17 Jun 2024 : 18 Jun 2024 : 18 Jun 2024 - Wes Davis

GFL Environmental - 402- Fort Wayne TS 4429 Allen Martin Drive Fort Wayne, IN

US 46806 Contact: ZACHORY ROEHM

T:

F:

zroehm@gflenv.com

Test Package : FLEET Certificate 12367 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)

Submitted By: See also GFL401 - ZACHORY ROEHM