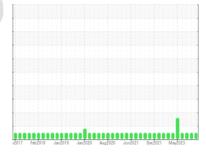


OIL ANALYSIS REPORT

Area (**P587731**) 2572

Diesel Engine

PETRO CANADA DURON SHP 15W40 (10 GAL)



Sample Rating Trend



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 oil.

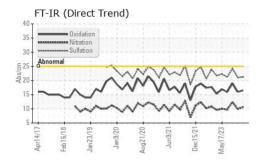
Fluid Condition

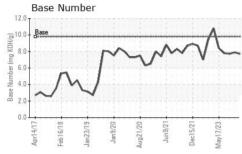
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

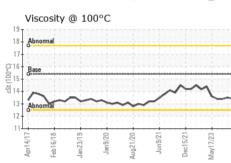
Sample Number Client Info GFL0110370 GFL0096906 GFL0096 Sample Date Client Info 15 May 2024 01 May 2024 15 Nov 2 Machine Age hrs Client Info 25945 35406 24817 Client Info 28802 6604 24224 Client Info Changed N/A Changed Sample Status NORMAL NORMAL	āAL)		r2017 Feb20	18 Jan 2019 Jan 2020	Aug2020 Jun2021 Dec2021 1	May2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0110370	GFL0096906	GFL0096977
Oil Age hrs Client Info 28802 6604 24224 Oil Changed Client Info Changed N/A Changed Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		15 May 2024	01 May 2024	15 Nov 2023
Oil Changed Sample Status Client Info Changed NORMAL N/A Changed NORMAL N/A Changed NORMAL N/A Changed NORMAL N/A Changed NORMAL N/A Changed NORMAL N/A NORMAL NEG NEG	Machine Age	hrs	Client Info		25945		24817
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1	Oil Age	hrs	Client Info		28802	6604	24224
CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		Changed	N/A	Changed
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 <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 <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	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >165 16 14 21 Chromium ppm ASTM D5185m >5 <1	CONTAMINATI	ION	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 history1 Iron ppm ASTM D5185m >165 16 14 21 Chromium ppm ASTM D5185m >5 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 <1 <1 1 Nickel ppm ASTM D5185m >4 0 0 <1 Titanium ppm ASTM D5185m >2 0 <1 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >90 <1 <1 2 Copper ppm ASTM D5185m >90 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 0<	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>165	16	14	21
Titanium	Chromium	ppm	ASTM D5185m	>5	<1	<1	1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 2 2 2 Lead ppm ASTM D5185m >90 <1 <1 2 3 Copper ppm ASTM D5185m >90 <1 <1 2 3 Copper ppm ASTM D5185m >90 <1 <1 2 3 Vanadium ppm ASTM D5185m >90 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum ppm ASTM D5185m >20 2 3 3 3 3 4 1 2 3 3 3 2 1 4 1 2 3 3 2 1 4 1 2 3 3 2 1 4 1 2 3 3 2 1 4 1 2 3 3 2 1 4 1 2 3 3 2	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >90 <1 <1 2 Tin ppm ASTM D5185m >5 <1	Aluminum	ppm	ASTM D5185m	>20	2	2	2
Tin ppm ASTM D5185m >5 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 0 0 0 10 Molybdenum ppm ASTM D5185m 0 66 64 68 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm	Lead	ppm	ASTM D5185m	>150	1	2	3
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 0 0 10 Molybdenum ppm ASTM D5185m 60 66 64 68 Manganese ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>90	<1	<1	2
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 0 0 10 Molybdenum ppm ASTM D5185m 60 66 64 68 Manganese ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Sodium ppm ASTM D5185m >35	Tin	ppm	ASTM D5185m	>5	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 7 5 9 Barium ppm ASTM D5185m 0 0 0 10 Molybdenum ppm ASTM D5185m 60 66 64 68 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m >20 2 2 3 Potassium ppm ASTM D5185m	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0 0 0 10 Molybdenum ppm ASTM D5185m 60 66 64 68 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 66 64 68 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624	Boron	ppm	ASTM D5185m	0	7	5	9
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m >20 2 2 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>10</td>	Barium	ppm	ASTM D5185m	0	0	0	10
Magnesium ppm ASTM D5185m 1010 942 931 850 Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m >4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	66	64	68
Calcium ppm ASTM D5185m 1070 1093 1108 1134 Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1093 1084 1014 Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m >4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1	Magnesium	ppm	ASTM D5185m	1010	942	931	850
Zinc ppm ASTM D5185m 1270 1244 1227 1164 Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7624 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1	Calcium	ppm		1070	1093	1108	1134
Sulfur ppm ASTM D5185m 2060 3498 3509 3481 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1	Phosphorus	ppm	ASTM D5185m	1150	1093	1084	1014
CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	Zinc	ppm	ASTM D5185m	1270	1244	1227	1164
Silicon ppm ASTM D5185m >35 9 7 15 Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1 history2			ASTM D5185m	2060	3498	3509	3481
Sodium ppm ASTM D5185m 4 5 3 Potassium ppm ASTM D5185m >20 2 2 2 3 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	Silicon	ppm	ASTM D5185m	>35	9	7	15
INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	Sodium	ppm	ASTM D5185m		4	5	3
Soot % % *ASTM D7844 >7.5 1.2 1.1 1.8 Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	Potassium	ppm	ASTM D5185m	>20	2	2	3
Nitration Abs/cm *ASTM D7624 >20 10.6 9.9 12.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.1 24.1 FLUID DEGRADATION method limit/base current history1 history1	Soot %	%	*ASTM D7844	>7.5	1.2	1.1	1.8
FLUID DEGRADATION method limit/base current history1 history1	Nitration	Abs/cm	*ASTM D7624	>20	10.6	9.9	12.4
·	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	21.1	24.1
Oxidation Abs/.1mm *ASTM D7414 >25 16.5 16.0 19.1	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.5	16.0	19.1
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.7 7.9 7.7	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.7	7.9	7.7



OIL ANALYSIS REPORT



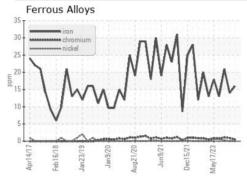


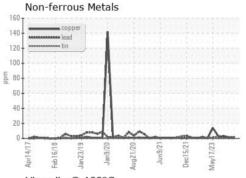


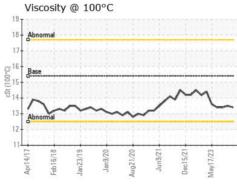
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

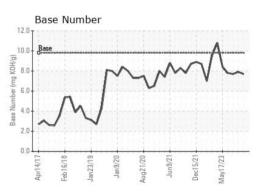
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.5	13.4

GRAPHS













Laboratory Sample No. Lab Number : 06187069 Unique Number : 11043821

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0110370

Received : 21 May 2024 **Tested** Diagnosed

: 23 May 2024 : 23 May 2024 - Wes Davis

GFL Environmental - 031 - Greenville/Spartanburg 1635 Antioch Church Rd

catherine.anastasio@wearcheck.com

Piedmont, SC US 29673 Contact: TECHNICIAN ACCOUNT

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)

T:

F: