

OIL ANALYSIS REPORT

Sample Rating Trend







Macl 91 Com Die Fluic PF

Machine Id 912009 Component Diesel Engine Fluid

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

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

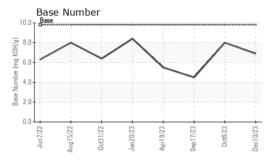
Fluid Condition

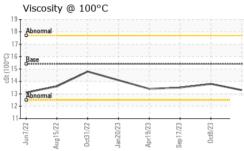
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0097743 GFL0087274 GFL0087274				ug2022 Oct2022 Jan20		Dec2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 6773 6255 6125	Sample Number		Client Info		GFL0097743	GFL0087274	GFL0087249
Oil Age hrs Client Info 518 130 700 Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed Changed Changed Changed NORMAL NORMAL NORMAL NORMAL NORMAL NORMA	Sample Date		Client Info		10 Dec 2023	08 Oct 2023	17 Sep 2023
Client Info	Machine Age	hrs	Client Info		6773	6255	6125
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		518	130	700
CONTAMINATION method limit/base current history1 history2 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	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 >120 7 7 42 Chromium ppm ASTM D5185m >20 <1 <1 2 Nickel ppm ASTM D5185m >20 <1 <1 <1 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1 1 3 Lead ppm ASTM D5185m >40 0 <1 2 1 Copper ppm ASTM D5185m >15 <1 <1 2 2 Vanadium ppm ASTM D5185m 0 0 0 <	CONTAMINAT	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 history2 Iron ppm ASTM D5185m >120 7 7 42 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	7	7	42
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Silver	Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Aluminum ppm ASTM D5185m >20 <1 1 3 Lead ppm ASTM D5185m >40 0 <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 <1 3 Copper ppm ASTM D5185m >330 2 4 21 Tin ppm ASTM D5185m >15 <1 <1 2 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 2 3 9 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 2 3 9 9 Barium ppm ASTM D5185m 0 41 0 2 55 Manganese ppm ASTM D5185m 0 <1 0 2 2 55 55 Manganesium	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 2 4 21 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	<1	1	3
Tin ppm ASTM D5185m >15 <1 <1 2 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 3 9 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 52 59 55 Manganese ppm ASTM D5185m 0 <1 0 2 Magnesium ppm ASTM D5185m 1010 863 883 740 Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 <1 2 4 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844">4 0.6 0.3 1.4 Nitration Abs/cm "ASTM D7844">20 7.6 5.6 10.6 Sulfation Abs/cm "ASTM D7844">30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm "ASTM D7414">25 15.5 13.6 19.9	Lead	ppm	ASTM D5185m	>40	0	<1	3
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 2 3 9 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 52 59 55 Manganese ppm ASTM D5185m 0 <1 0 2 Magnesium ppm ASTM D5185m 1010 863 883 740 Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base	Copper	ppm	ASTM D5185m	>330	2	4	21
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 3 9 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	<1	2
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 52 59 55 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 52 59 55 Manganese ppm ASTM D5185m 0 <1 0 2 Magnesium ppm ASTM D5185m 1010 863 883 740 Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 20 <1 2 4 Sodium ppm ASTM D5185m >20 <1 2 4 INFRA-RED method limit/base <	Boron	ppm	ASTM D5185m	0	2	3	9
Manganese ppm ASTM D5185m 0 <1 0 2 Magnesium ppm ASTM D5185m 1010 863 883 740 Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 20 <1 2 4 Rodium ppm ASTM D5185m 20 <1 2 4 Sodium ppm ASTM D5185m >20 <1 2 4 INFRA-RED method limit/base cur	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 863 883 740 Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m	60	52	59	55
Calcium ppm ASTM D5185m 1070 993 1070 1129 Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m	0	<1	0	2
Phosphorus ppm ASTM D5185m 1150 892 992 923 Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m	1010	863	883	740
Zinc ppm ASTM D5185m 1270 1191 1196 1196 Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	1070	993	1070	1129
Sulfur ppm ASTM D5185m 2060 2541 3202 2698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	Phosphorus	ppm	ASTM D5185m	1150	892	992	923
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	Zinc	ppm	ASTM D5185m	1270	1191	1196	1196
Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.3 1.4 Nitration Abs/cm *ASTM D7624 >20 7.6 5.6 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Sulfur	ppm	ASTM D5185m	2060	2541	3202	2698
Sodium ppm ASTM D5185m 2 4 8 Potassium ppm ASTM D5185m >20 <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 2 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.3 1.4 Nitration Abs/cm *ASTM D7624 >20 7.6 5.6 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Silicon	ppm	ASTM D5185m	>25	3	3	4
INFRA-RED	Sodium	ppm	ASTM D5185m		2	4	8
Soot % % *ASTM D7844 >4 0.6 0.3 1.4 Nitration Abs/cm *ASTM D7624 >20 7.6 5.6 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Potassium	ppm	ASTM D5185m	>20	<1	2	4
Nitration Abs/cm *ASTM D7624 >20 7.6 5.6 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.9 18.0 24.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Soot %	%	*ASTM D7844	>4	0.6	0.3	1.4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Nitration	Abs/cm	*ASTM D7624	>20	7.6	5.6	10.6
Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.6 19.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.9	18.0	24.6
	FLUID DEGRAD	OATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 6.9 8.0 4.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	13.6	19.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.9	8.0	4.5



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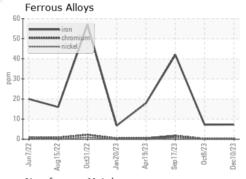


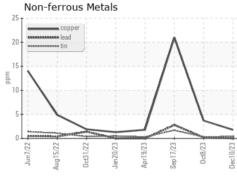


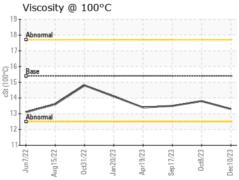
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

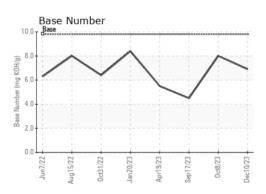
FLUID PROP	ERITES.	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.8	13.5

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0097743 : 06037523 : 10792752

Recieved : 18 Dec 2023 Diagnosed : 19 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 405 - Arbor Hills

7400 Napier Rd NORTHVILLE, MI US 48168 Contact: John Nahal

jnahal@gflenv.com

T: F:

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)