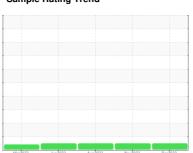


OIL ANALYSIS REPORT

Sample Rating Trend









Machine Id 413035 Component Diesel Engine Fluid

PETRO CANADA 15W40 (10 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the

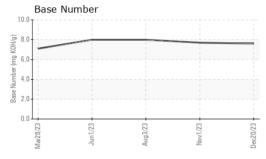
Fluid Condition

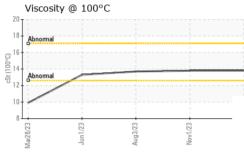
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	10 (10 GAL)		Mar2023	Jun2023	Aug2023 Nov2023	Dec2023	
Client Info 20 Dec 2023 01 Nov 2023 03 Aug 2023	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 806	Sample Number		Client Info		GFL0088495	GFL0098095	GFL0088562
Oil Age	Sample Date		Client Info		20 Dec 2023	01 Nov 2023	03 Aug 2023
Contamped Client Info N/A N/A N/A NORMAL NO	Machine Age	hrs	Client Info		806	806	806
CONTAMINATION method milibase current history1 history2	Oil Age	hrs	Client Info		532	497	497
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		N/A	N/A	N/A
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 10 10 9 Chromium ppm ASTM D5185m >20 <1	CONTAMINATION	NC	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20	WEAR METALS	;	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>120	10	10	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	1	<1	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead	Silver	ppm	ASTM D5185m	>2			
Copper	Aluminum	ppm	ASTM D5185m	>20	2	2	5
Tin	_ead	ppm	ASTM D5185m	>40	0	0	
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 1 4 6 6 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 61 64 56 Magnesium ppm ASTM D5185m 992 950 955 Calcium ppm ASTM D5185m 1123 1178 1130 Phosphorus ppm ASTM D5185m 1319 1269 1312 Zinc ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 CONTAMINANTS method limit	Copper	ppm	ASTM D5185m	>330	2	4	7
ADDITIVES		ppm		>15	1	<1	
ADDITIVES	Vanadium	ppm	ASTM D5185m			0	
Soron ppm ASTM D5185m 1 4 6		ppm	ASTM D5185m		<1	<1	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 61 64 56 Manganese ppm ASTM D5185m <1 0 <1 Magnesium ppm ASTM D5185m 992 950 955 Calcium ppm ASTM D5185m 1123 1178 1130 Phosphorus ppm ASTM D5185m 1117 957 1041 Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/.1mm *ASTM D7	Boron	ppm	ASTM D5185m		1	4	6
Manganese ppm ASTM D5185m <1 0 <1 Magnesium ppm ASTM D5185m 992 950 955 Calcium ppm ASTM D5185m 1123 1178 1130 Phosphorus ppm ASTM D5185m 1117 957 1041 Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulf	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 992 950 955 Calcium ppm ASTM D5185m 1123 1178 1130 Phosphorus ppm ASTM D5185m 1117 957 1041 Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6	Molybdenum	ppm	ASTM D5185m		61	64	
Calcium ppm ASTM D5185m 1123 1178 1130 Phosphorus ppm ASTM D5185m 1117 957 1041 Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m 4 4 3 Potassium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th></th> <td></td> <td></td>	Manganese	ppm	ASTM D5185m				
Phosphorus ppm ASTM D5185m 1117 957 1041 Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	-		ASTM D5185m			950	
Zinc ppm ASTM D5185m 1319 1269 1312 Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m 20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9		ppm	ASTM D5185m		1123	1178	1130
Sulfur ppm ASTM D5185m 3166 3363 3586 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m 20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	·	ppm					
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m 4 4 3 Potassium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	-	ppm					
Silicon ppm ASTM D5185m >25 5 4 5 Sodium ppm ASTM D5185m 4 4 3 Potassium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9			ASTM D5185m		3166	3363	
Sodium ppm ASTM D5185m 4 4 3 Potassium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	CONTAMINANT	S		limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 6 21 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9		ppm		>25	5	4	
INFRA-RED		ppm	ASTM D5185m		4	4	3
Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	Potassium	ppm	ASTM D5185m	>20	6	21	17
Nitration Abs/cm *ASTM D7624 >20 8.6 8.5 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	Soot %	%	*ASTM D7844	>4	0.3	0.3	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	Nitration	Abs/cm	*ASTM D7624	>20	8.6	8.5	7.9
Oxidation Abs/.1mm *ASTM D7414 >25 17.1 17.1 15.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.6	20.5	19.6
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 7.6 7.7 8.0	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.1	17.1	15.9
	Base Number (BN)	mg KOH/g	ASTM D2896		7.6	7.7	8.0



OIL ANALYSIS REPORT

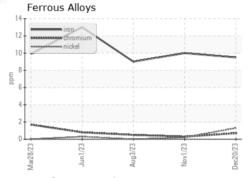


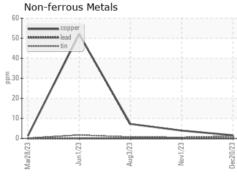


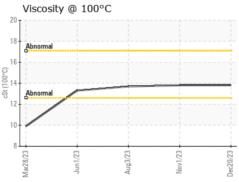
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

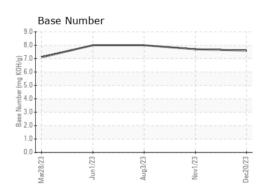
FLUID PROPERTIES		method			history2	
Visc @ 100°C	cSt	ASTM D445	13.8	13.8	13.7	

GRAPHS













Certificate L2367

Laboratory Sample No.

Lab Number Unique Number : 10796543 Test Package : FLEET

: GFL0088495 : 06041314

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 20 Dec 2023

Diagnosed : 22 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 017 - Durham 148 Stone Park Court Durham, NC

US 27703 Contact: William Russel

william.russell@gflenv.com T:

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)

F: (919)598-1852