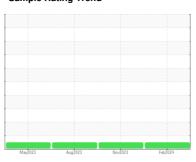


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **426147 - SW4626**

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (---

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Engine)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

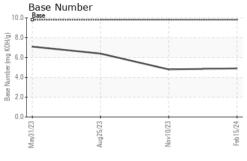
Fluid Condition

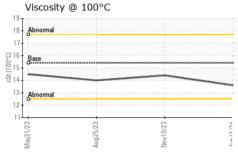
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0105452 GFL0094087 GFL008946 Sample Date Client Info 15 Feb 2024 10 Nov 2023 25 Aug 202 25 Aug 202 20 Aug 20	iAL)		May202	3 Aug ² 023	Nov2023 Fr	b2024	
Sample Date	SAMPLE INFO	RMATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 329147 317495 306883 306883 Client Info 329147 317495 306883 306883 329147 317495 306883 306883 329147 317495 306883 306883 329147 317495 306883 306883 329147 317495 306883 306884	Sample Number		Client Info		GFL0105452	GFL0094087	GFL0089464
Oil Age	Sample Date		Client Info		15 Feb 2024	10 Nov 2023	25 Aug 2023
Contained Client Info Changed NORMAL NEG N	Machine Age	mls	Client Info		329147	317495	306883
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 history2 NEG NE	Oil Age	mls	Client Info		329147	317495	306883
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 30 25 20 Chromium ppm ASTM D5185m >20 <1 1 <1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >20 2 2 <1 Silver ppm ASTM D5185m >40 <1 <1 0 Silver ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >330 1 2 4 Tin ppm ASTM D5185m >15 0 0 0 0 Caddmium ppm ASTM D5185m 0 0 <td>CONTAMINA</td> <td>TION</td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	CONTAMINA	TION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Company ASTM D5185m STM D	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR META	LS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	30	25	20
Description	Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 1 2 4 Tin ppm ASTM D5185m 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 52 42 48 Manganese ppm ASTM D5185m 0 <1	Aluminum	ppm	ASTM D5185m	>20	2		<1
Tin	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 52 42 48 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 14 0 80 Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current histo	Copper	ppm	ASTM D5185m	>330	1	2	4
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15		0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 60 52 42 48 Manganese ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 60 52 42 48 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 14 0 80 Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1150 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base <t< td=""><td>ADDITIVES</td><td></td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></t<>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 52 42 48 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 14 0 80 Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1070 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 <th< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>0</th><td>0</td><td>0</td></th<>	Boron	ppm	ASTM D5185m	0	0	0	0
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 14 0 80 Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1150 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	3	0	0
Magnesium ppm ASTM D5185m 1010 14 0 80 Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1150 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION *ASTM D7414 <th< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>60</td><th>52</th><td>42</td><td>48</td></th<>	Molybdenum	ppm	ASTM D5185m	60	52	42	48
Calcium ppm ASTM D5185m 1070 2231 2354 2393 Phosphorus ppm ASTM D5185m 1150 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 981 984 1088 Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m >0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method <	Magnesium	ppm	ASTM D5185m	1010	14	0	80
Zinc ppm ASTM D5185m 1270 1116 1200 1287 Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *AST	Calcium	ppm	ASTM D5185m	1070	2231	2354	2393
Sulfur ppm ASTM D5185m 2060 2951 2571 3778 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Phosphorus	ppm	ASTM D5185m	1150	981	984	1088
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Zinc	ppm	ASTM D5185m	1270	1116	1200	1287
Silicon ppm ASTM D5185m >25 10 11 8 Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Sulfur	ppm	ASTM D5185m	2060	2951	2571	3778
Sodium ppm ASTM D5185m 0 5 3 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8		ppm	ASTM D5185m	>25	10		8
INFRA-RED	Sodium	ppm	ASTM D5185m		0	5	3
Soot % % *ASTM D7844 >3 0.7 0.7 1.1 Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Potassium	ppm	ASTM D5185m	>20	2	2	0
Nitration Abs/cm *ASTM D7624 >20 11.9 11.8 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 24.6 25.4 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Soot %	%	*ASTM D7844	>3	0.7	0.7	1.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Nitration	Abs/cm	*ASTM D7624	>20	11.9	11.8	11.4
Oxidation Abs/.1mm *ASTM D7414 >25 16.0 15.7 14.8	Sulfation	Abs/.1mm	*ASTM D7415	>30	24.6	25.4	23.0
	FLUID DEGRA	ADATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 4.9 4.8 6.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.0	15.7	14.8
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	4.9	4.8	6.4



OIL ANALYSIS REPORT

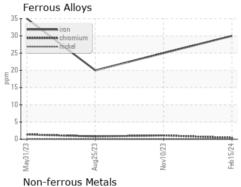


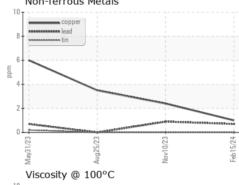


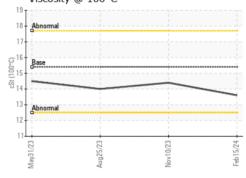
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

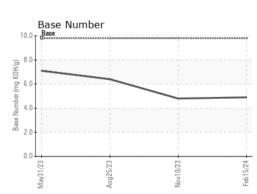
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	14.4	14.0	

GRAPHS













Certificate L2367

Laboratory Sample No.

Test Package : FLEET

: GFL0105452 Lab Number : 06093991 Unique Number : 10886844

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 20 Feb 2024

Tested : 21 Feb 2024 Diagnosed : 21 Feb 2024 - Don Baldridge

GFL Environmental - 983 - Sugar Land Hauling

16011 West Belfort Street Sugar Land, TX US 77498

Contact: Adrian Martinez adrianmartinez@gflenv.com

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: