

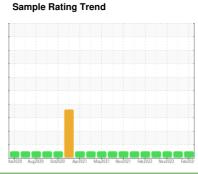
OIL ANALYSIS REPORT

(YA154608) **AUTOCAR 3871**

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (10 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

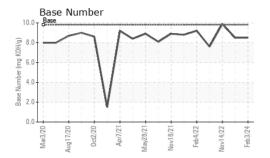
Fluid Condition

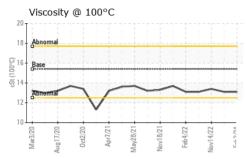
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0111361 GFL0072241 GFL005904 Sample Date Client Info 03 Feb 2024 12 Jul 2023 14 Nov 2023 14			// Aar2020 Aug2			2022 Feb202 [,]	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 8338 8338 8338 Oil Age hrs Client Info 0 11303 7228 Oil Age hrs Client Info 0 11303 7228 Oil Age hrs Client Info N/A Changed N/A NORMAL	Sample Number		Client Info		GFL0111361	GFL0072241	GFL0059047
Oil Age	Sample Date		Client Info		03 Feb 2024	12 Jul 2023	14 Nov 2022
Colient Info	Machine Age	hrs	Client Info		0	8338	8338
Oil Changed Client Info N/A NORMAL NOR	Oil Age	hrs	Client Info		0	11303	7228
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG NEG	-		Client Info		N/A	Changed	N/A
Fue					NORMAL		NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase Current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 <1 <1 <1 Chromium ppm ASTM D5185m >5 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 <1 2 Lead ppm ASTM D5185m >20 <1 <1 2 Copper ppm ASTM D5185m >5 <1 <1 <1 <1 Vanadium ppm ASTM D5185m >5 <1 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 </td <td>·</td> <td>ION</td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	·	ION	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
WEAR METALS method limit/base current history1 history2							
Chromium		.S	method	limit/base	current	history1	history2
Chromium							
Nickel							
Titanium							
Silver							
Aluminum							
Lead							
Copper ppm ASTM D5185m >90 2 <1 1 Tin ppm ASTM D5185m >5 <1	Aluminum	ppm	ASTM D5185m	>20			
Tin	Lead	ppm				2	1
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 9 28 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 62 62 62 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>90</td> <th>2</th> <td><1</td> <td>1</td>	Copper	ppm	ASTM D5185m	>90	2	<1	1
Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 9 28 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 62 62 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 11270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m	Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 9 28 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 4 1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 <1 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Solicon ppm	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron	Cadmium	ppm	ASTM D5185m		<1	0	<1
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 62 62 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >20 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	0	5	9	28
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >20 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >20 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	62	62	55
Magnesium ppm ASTM D5185m 1010 939 878 747 Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >20 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415	-	ppm	ASTM D5185m	0	<1	<1	<1
Calcium ppm ASTM D5185m 1070 1023 1098 1287 Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >35 4 4 3 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7414 >7.5 0.4 0.3 0.2	•				939	878	747
Phosphorus ppm ASTM D5185m 1150 967 1002 991 Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m >35 4 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td>							
Zinc ppm ASTM D5185m 1270 1213 1168 1220 Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m 20 4 1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm							
Sulfur ppm ASTM D5185m 2060 3020 3107 3729 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m 4 <1							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m 4 <1							
Silicon ppm ASTM D5185m >35 4 4 3 Sodium ppm ASTM D5185m 4 <1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3							
Sodium ppm ASTM D5185m 4 <1 2 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3						•	,
Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3				200			
INFRA-RED				>20			
Soot % *ASTM D7844 >7.5 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3		PPIII					
Nitration Abs/cm *ASTM D7624 >20 7.0 6.8 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3		0/				•	
Sulfation Abs/.1mm *ASTM D7415 >30 18.3 18.8 20.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3							
Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.2 15.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.3	18.8	20.1
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.5 8.5 9.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	14.2	15.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.5	8.5	9.9



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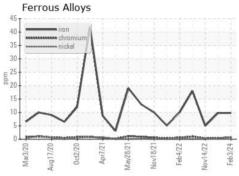


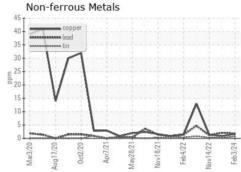


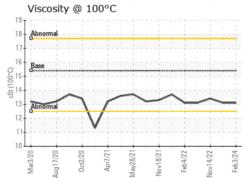
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

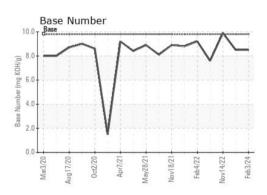
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.1	13.1	13.4

GRAPHS













Certificate L2367

Laboratory Sample No.

: GFL0111361 Lab Number : 06078138 Unique Number: 10860229 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 02 Feb 2024

Tested : 05 Feb 2024 Diagnosed : 05 Feb 2024 - Wes Davis

GFL Environmental - 004 - Newport - Central Coast

427 Roberts Road Newport, NC US 28570

F: (252)223-6010

Contact: Marquis Williams marquis.williams@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)