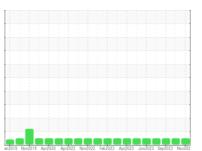


OIL ANALYSIS REPORT

Sample Rating Trend







427067-402308

Component

Diesel Engine

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

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

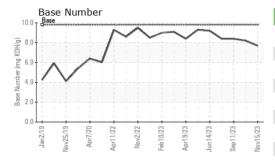
Fluid Condition

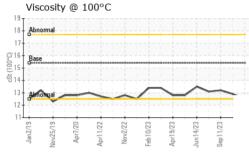
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION	`		an 2019 Nov 201	9 Apr2020 Apr2022 Nov2	022 Feb2023 Apr2023 Jun2023 Se	2023 Nov202	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 2985 29679 29504 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info Not Changd Not Changd Not Changd Sample Status method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history2 history2 Iron ppm ASTM D5185m >120 2 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0099886</th> <th>GFL0095119</th> <th>GFL0090733</th>	Sample Number		Client Info		GFL0099886	GFL0095119	GFL0090733
Oil Age hrs Client Info Not Changd Not Changd Not Changd	Sample Date		Client Info		15 Nov 2023	06 Oct 2023	11 Sep 2023
Oil Changed Cilient Info Not Changd NORMAL NORMAL NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		2985	29679	29504
CONTAMINATION	Oil Age	hrs	Client Info		0	0	0
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		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imili/base current history1 history2 WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >120 2 2 2 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >5 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >15 <1 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 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	Water		WC Method	>0.2	NEG	NEG	NEG
Iron			WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >5 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 <1 2 Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 0 0 <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 <1 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >5 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >20 0 0 <1 Copper ppm ASTM D5185m >40 0 0 <1 Tin ppm ASTM D5185m >15 <1 0 0 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 3 2 2 Boron ppm ASTM D5185m 0 3 2 2 Barium ppm ASTM D5185m 0 0 0 0 </th <th>Iron</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>120</th> <th>2</th> <th>2</th> <th>2</th>	Iron	ppm	ASTM D5185m	>120	2	2	2
Nickel		• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>20			0
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 <1 <1 <1 Tin ppm ASTM D5185m >15 <1 0 0 Vanadium ppm ASTM D5185m 0 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 2 2 2 Barium ppm ASTM D5185m 0 0 0 0 0 0 Magnesium ppm ASTM D5185m 1010					-		
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1	Titanium	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>2	0	0	0
Aluminum ppm ASTM D5185m >20 2 <1					-		
Lead ppm ASTM D5185m >40 0 0 <1	Aluminum	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>20		<1	2
Copper ppm ASTM D5185m >330 <1					0		
Tin ppm ASTM D5185m >15 <1		• • • • • • • • • • • • • • • • • • • •					
Vanadium ppm ASTM D5185m 0 0 <1							
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 2 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 970 958 1006 Calcium ppm ASTM D5185m 1070 1022 1016 1109 Phosphorus ppm ASTM D5185m 1270 1266 1211 1276 Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 <th></th> <th>• • • • • • • • • • • • • • • • • • • •</th> <th></th> <th></th> <th></th> <th></th> <th></th>		• • • • • • • • • • • • • • • • • • • •					
ADDITIVES							
Boron	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 <1		nnm	ASTM D5185m	0	3		
Molybdenum ppm ASTM D5185m 60 59 58 60 Manganese ppm ASTM D5185m 0 <1		• • • • • • • • • • • • • • • • • • • •					
Manganese ppm ASTM D5185m 0 <1					-		-
Magnesium ppm ASTM D5185m 1010 970 958 1006 Calcium ppm ASTM D5185m 1070 1022 1016 1109 Phosphorus ppm ASTM D5185m 1150 1037 986 1035 Zinc ppm ASTM D5185m 1270 1266 1211 1276 Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m >20 <1							
Calcium ppm ASTM D5185m 1070 1022 1016 1109 Phosphorus ppm ASTM D5185m 1150 1037 986 1035 Zinc ppm ASTM D5185m 1270 1266 1211 1276 Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m >20 <1 0 <1 Potassium ppm ASTM D5185m >20 <1 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION *ASTM D7414 <th>· ·</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	· ·						
Phosphorus ppm ASTM D5185m 1150 1037 986 1035 Zinc ppm ASTM D5185m 1270 1266 1211 1276 Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m >20 <1 0 <1 Potassium ppm ASTM D5185m >20 <1 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION *							
Zinc ppm ASTM D5185m 1270 1266 1211 1276 Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m >20 <1 1 <1 1 Potassium ppm ASTM D5185m >20 <1 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs					-		
Sulfur ppm ASTM D5185m 2060 3016 3030 3743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m >20 <1 1 1 1 Potassium ppm ASTM D5185m >20 <1 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8		• • • • • • • • • • • • • • • • • • • •					
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m 1 <1 1 Potassium ppm ASTM D5185m >20 <1 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8							
Silicon ppm ASTM D5185m >25 4 3 3 Sodium ppm ASTM D5185m 1 <1	CONTAMINAN			limit/base			
Sodium ppm ASTM D5185m 1 <1				>25	4	3	3
Potassium ppm ASTM D5185m >20 <1							
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8				>20			
Soot % % *ASTM D7844 >4 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8	INFRA-RED	''	method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 7.1 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8		%					
Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.8 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8							
Oxidation Abs/.1mm *ASTM D7414 >25 15.9 15.2 13.8							
							· ·
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.7 8.2 8.4							
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.7	8.2	8.4



OIL ANALYSIS REPORT

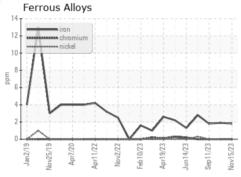


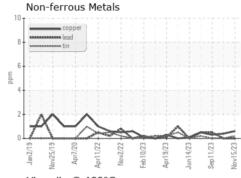


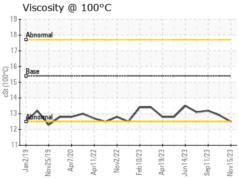
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

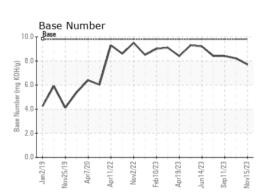
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.5	12.9	13.2

GRAPHS













Certificate L2367

Laboratory

Sample No. Lab Number Unique Number : 10754766 Test Package : FLEET

: GFL0099886 : 06015622

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 22 Nov 2023 Diagnosed : 26 Nov 2023 Diagnostician : Wes Davis

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126

Contact: Robert Hart rhart@gflenv.com T: (580)461-1509

* - 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)