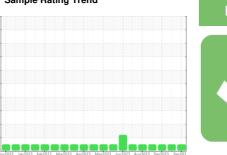


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 913024 Component Diesel Engine Fluid 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

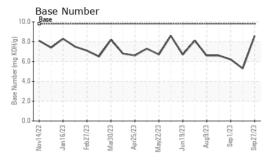
Fluid Condition

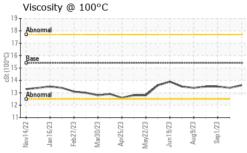
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0069116 GFL0069147 GFL006912 Sample Date Client Info 27 Sep 2023 18 Sep 2023 01 Sep 202 01 Sep 20	N SHP 15W4U (-	GAL)	lov2022 Jan20	23 Feb 2023 Mar 2023 Apr 20	023 May2023 Jun2023 Aug2023 Se	p2023 Sep202	
Client Info 27 Sep 2023 18 Sep 2023 01 Sep 2026 Machine Age hrs Client Info 3371 3249 3128 3	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0069116	GFL0069147	GFL006912
Machine Age hrs Client Info 3371 3249 3128 Dil Age hrs Client Info 968 846 725 Dil Changed Client Info NoRMAL Not Changd NoRMAL Not Changd NoRMAL NoRMAL NoRMAL CONTAMINATION method Imitibase current history1 history2 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		27 Sep 2023	18 Sep 2023	01 Sep 2023
Dil Age	Machine Age	hrs	Client Info		-		
Dil Changed Client Info Not Changed Not Changed NORMAL		hrs	Client Info		968	846	725
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 Silver NEG NEG	-						
WEAR METALS						Ü	Ü
WEAR METALS	CONTAMINAT	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 5 28 20 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	5	28	20
Silver	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Titanium ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 5 4 1 Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 <1 3 2 Tin ppm ASTM D5185m 0 0 0 0 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 5 Barium ppm ASTM D5185m 0 0 0 2 Magnesium ppm ASTM D5185m 0 <1 <1 <1	Nickel	ppm	ASTM D5185m	>5	0	3	3
Silver	Titanium		ASTM D5185m	>2	0	<1	0
Aluminum	Silver		ASTM D5185m	>2	0	0	0
Lead	Aluminum		ASTM D5185m	>20	5	4	1
Copper ppm ASTM D5185m >330 <1 3 2 Tin ppm ASTM D5185m >15 <1	Lead		ASTM D5185m	>40		<1	0
Tin	Copper		ASTM D5185m	>330	<1	3	
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 5 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 60 61 72 68 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 864 935 991 Calcium ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base curren					<1		1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 3 5 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 6 61 72 68 Manganese ppm ASTM D5185m 0 <1							
Boron ppm ASTM D5185m 0 2 3 5	Cadmium						0
Barium ppm ASTM D5185m 0 0 2 Molybdenum ppm ASTM D5185m 60 61 72 68 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 61 72 68 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 864 935 991 Calcium ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844	Boron	ppm	ASTM D5185m	0	2	3	5
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 864 935 991 Calcium ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1150 984 1014 1022 Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m 20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	0	0	2
Magnesium ppm ASTM D5185m 1010 864 935 991 Calcium ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1150 984 1014 1022 Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION *ASTM D7414<	Molybdenum	ppm	ASTM D5185m	60	61	72	68
Calcium ppm ASTM D5185m 1070 1016 1140 1130 Phosphorus ppm ASTM D5185m 1150 984 1014 1022 Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method li	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 984 1014 1022 Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>864</th><td>935</td><td>991</td></td<>	Magnesium	ppm	ASTM D5185m	1010	864	935	991
Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Calcium	ppm	ASTM D5185m	1070	1016	1140	1130
Zinc ppm ASTM D5185m 1270 1198 1254 1247 Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	984	1014	1022
Sulfur ppm ASTM D5185m 2060 3503 2896 3190 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Zinc	- ' '	ASTM D5185m	1270	1198	1254	1247
Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Sulfur		ASTM D5185m	2060	3503	2896	3190
Sodium ppm ASTM D5185m 2 6 6 Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 10 6 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Silicon	ppm	ASTM D5185m	>25	3	8	6
INFRA-RED	Sodium	ppm	ASTM D5185m		2	6	6
Soot % % *ASTM D7844 >4 0.2 0.9 0.8 Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Potassium	ppm	ASTM D5185m	>20	10	6	4
Nitration Abs/cm *ASTM D7624 >20 5.4 10.5 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Soot %	%	*ASTM D7844	>4	0.2	0.9	0.8
Sulfation Abs/.1mm *ASTM D7415 >30 17.4 23.7 23.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Nitration	Abs/cm	*ASTM D7624	>20	5.4	10.5	10.5
Oxidation Abs/.1mm *ASTM D7414 >25 13.0 20.2 19.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.4		23.1
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.0	20.2	19.4
	Base Number (BN)	mg KOH/q	ASTM D2896	9.8	8.6		6.2



OIL ANALYSIS REPORT



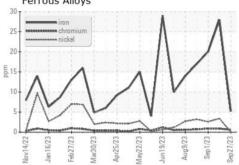


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

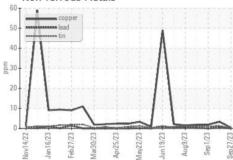
FLUID PROPI	ERITES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.4	13.5

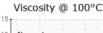
GRAPHS

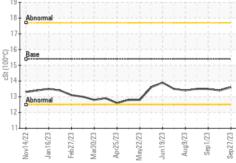
Ferrous Alloys

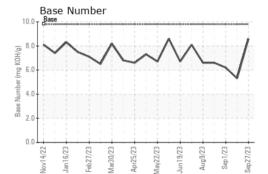
















Certificate L2367

Laboratory Sample No. Lab Number

Unique Number : 10671622

: GFL0069116 : 05965071 Test Package : FLEET

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 29 Sep 2023

Diagnosed : 02 Oct 2023 Diagnostician : Wes Davis

GFL Environmental - 073 - Warner Robins - Transwaste

155 Story Road Warner Robins, GA US 31093

Contact: JOSH MALONEY

jmaloney@gflenv.com T:

* - 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: