

OIL ANALYSIS REPORT

Sample Rating Trend

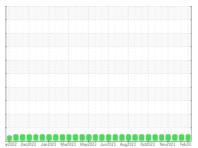
NORMAL



MONTGOMERY Machine Id MACK 420043

Component
Diesel Engine

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





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

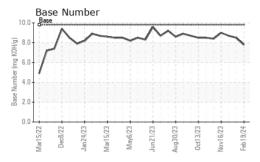
Fluid Condition

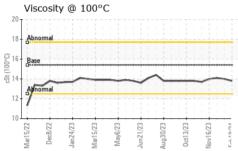
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0088639 GFL0087963 GFL008 Sample Date Client Info 19 Feb 2024 28 Dec 2023 06 Dec 2014 Machine Age hrs Client Info 1529 12209 11015 Oil Age hrs Client Info 1529 2107 913 Oil Changed Client Info Not Changd Not Changd NorMAL NORMAL NORMAL NORMAL NORMAL NORMAL Sample Status NORMAL NORMAL	CAMPLE INCOR	AATION	alzozz Deczoz		023 Jun2023 Aug2023 Oct2023 N		444
Sample Date Client Info 19 Feb 2024 28 Dec 2023 06 Dec Machine Age hrs Client Info 1529 12209 11015 1529 1207 913 1016 1529 1207 913 1016 1529 1207 913 1016 1529 1207 913 1016 1010 1016 1010 1	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 1529 12209 11015 Oil Age hrs Client Info 1529 2107 913 Oil Changed Client Info Not Changd	Sample Number					GFL0087963	GFL0091264
Oil Age hrs Client Info 1529 2107 913 Oil Changed Sample Status Client Info Not Changd Not Changd Not Changd Not Changd Not Changd NoRMAL Not Changd NoRMAL 1.0 <th></th> <th></th> <th>Client Info</th> <th></th> <th>19 Feb 2024</th> <th>28 Dec 2023</th> <th>06 Dec 2023</th>			Client Info		19 Feb 2024	28 Dec 2023	06 Dec 2023
Oil Changed Sample Status Client Info Not Changd NORMAL	Machine Age	hrs	Client Info		1529		11015
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 hist history1 hist history1 hist history1 hist hist history1 hist his	ŭ	hrs			1529	2107	913
Fuel	Oil Changed		Client Info			Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 hist Iron ppm ASTM D5185m >120 5 2 <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 hist Iron ppm ASTM D5185m >120 5 2 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	5	2	<1
Titanium ppm ASTM D5185m ≥2 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1 <1 <1 Lead ppm ASTM D5185m >40 0 0 0 0 Copper ppm ASTM D5185m >40 0 0 0 0 Vanadium ppm ASTM D5185m >15 <1 <1 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 3 5 4 4 Boron ppm ASTM D5185m 0 3 5 4 4 Barium ppm ASTM D5185m 0 3 0 0 0 Molybdenum ppm ASTM D5185m 0 3 0 0 1 </td <td>Chromium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>20</td> <th><1</th> <td><1</td> <td>0</td>	Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1	Nickel	ppm	ASTM D5185m	>5	<1	0	0
Aluminum ppm ASTM D5185m >20 1 <1 <1 <1 Lead ppm ASTM D5185m >40 0 0 0 0 Copper ppm ASTM D5185m >330 9 <1	Titanium	ppm	ASTM D5185m	>2	0	<1	0
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 9 <1 0 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185m 0 3 5 4 Boron ppm ASTM D5185m 0 3 5 4 Boron ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 3 0 0 Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 9 <1 0 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	1	<1	<1
Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185m 0 3 5 4 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 3 0 0 Manganese ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185m 0 3 5 4 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 3 0 0 Manganese ppm ASTM D5185m 0 0 <1	Copper	ppm	ASTM D5185m	>330	9	<1	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185m 0 3 5 4 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 60 54 60 58 Manganese ppm ASTM D5185m 0 0 <1	Tin	ppm	ASTM D5185m	>15	<1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 3 5 4 Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 0 54 60 58 Manganese ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 3 0 0 Molybdenum ppm ASTM D5185m 60 54 60 58 Manganese ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1150 961 1010 1027 Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 54 60 58 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m	0	3	5	4
Manganese ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1150 961 1010 1027 Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	3	0	0
Magnesium ppm ASTM D5185m 1010 818 969 957 Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1150 961 1010 1027 Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/cm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	54	60	58
Calcium ppm ASTM D5185m 1070 968 1113 1015 Phosphorus ppm ASTM D5185m 1150 961 1010 1027 Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % "ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm "ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm "ASTM D7415 >30 18.7 18.0 17.5	Manganese	ppm	ASTM D5185m	0	0	<1	0
Phosphorus ppm ASTM D5185m 1150 961 1010 1027 Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % "ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm "ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm "ASTM D7415 >30 18.7 18.0 17.5	Magnesium	ppm	ASTM D5185m	1010	818	969	957
Zinc ppm ASTM D5185m 1270 1065 1297 1249 Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m 0 3 1 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Calcium	ppm	ASTM D5185m	1070	968	1113	1015
Sulfur ppm ASTM D5185m 2060 3076 3243 3228 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m 0 3 1 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Phosphorus	ppm	ASTM D5185m	1150	961	1010	1027
CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m 0 3 1 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Zinc	ppm	ASTM D5185m	1270	1065	1297	1249
Silicon ppm ASTM D5185m >25 5 5 3 Sodium ppm ASTM D5185m 0 3 1 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Sulfur	ppm	ASTM D5185m	2060	3076	3243	3228
Sodium ppm ASTM D5185m 0 3 1 Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	CONTAMINAN [*]	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 0 INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Silicon	ppm	ASTM D5185m	>25	5		3
INFRA-RED method limit/base current history1 hist Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Sodium	ppm	ASTM D5185m		0	3	1
Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Potassium	ppm	ASTM D5185m	>20	2	2	0
Nitration Abs/cm *ASTM D7624 >20 7.5 5.9 5.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.7 18.0 17.5 FLUID DEGRADATION method limit/base current history1 hist	Soot %	%	*ASTM D7844	>4	0.3	0.2	0.1
FLUID DEGRADATION method limit/base current history1 hist	Nitration	Abs/cm	*ASTM D7624	>20	7.5	5.9	5.1
	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.7	18.0	17.5
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 15.0 14.2 13.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.0	14.2	13.7
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.8 8.5 8.7	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.8	8.5	8.7



OIL ANALYSIS REPORT

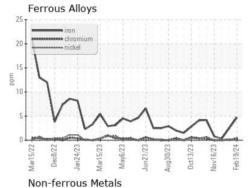


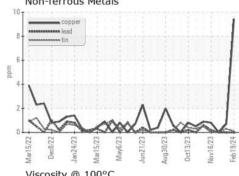


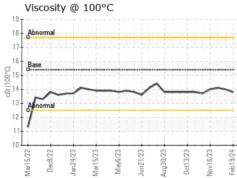
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

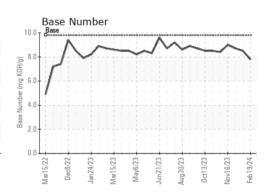
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.0	14.1

GRAPHS













Certificate L2367

Laboratory Sample No.

Test Package : FLEET

: GFL0088639 Lab Number : 06094025 Unique Number: 10886878

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received **Tested**

Diagnosed

: 21 Feb 2024 : 21 Feb 2024 - Wes Davis

: 20 Feb 2024

GFL Environmental - 955 - Montgomery

1121 Wilbanks St Montgomery, AL US 36108

Contact: LISA REEVES

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)

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F: