

OIL ANALYSIS REPORT

Sample Rating Trend









MONTGOMERY Machine Id MACK 920015-192536

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

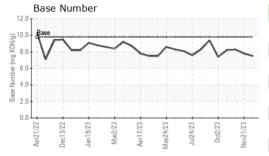
Fluid Condition

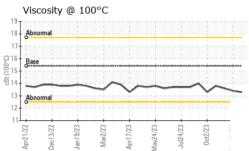
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0081261 GFL0087990 GFL0087978 Sample Date Client Info D5 Dec 2023 21 Nov 2023 03 Nov 2023 0	OAMBLE INCOR	AATION		11 14 1		11-1	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 12207 12106 11473 285 11473 285 201 11473 285 28	Sample Number		Client Info		GFL0091261	GFL0087990	GFL0087979
Oil Age hrs Client Info 520 419 285 Oil Changed Sample Status Client Info Changed Not Changd Not	•		Client Info		05 Dec 2023	21 Nov 2023	03 Nov 2023
Oil Changed Sample Status Client Info Changed NORMAL Not Changd NORMAL Not Changd NORMAL Not Changd NORMAL Not Changd NORMAL NOR	Machine Age	hrs			12207	12106	
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs				419	
CONTAMINATION	Oil Changed		Client Info			Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >12.0 9 9 6 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 <1 Silver ppm ASTM D5185m >2 0 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 0 0 Silver ppm ASTM D5185m >20 11 11 7 1	CONTAMINATI	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
Irron	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	9	9	6
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 11 11 7 Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 <1 <1 <1 Tin ppm ASTM D5185m >15 0 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 2 3 Barium ppm ASTM D5185m 0 0 <1 5 Molybdenum ppm ASTM D5185m 0 0 <1	Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Aluminum ppm ASTM D5185m >20 11 11 7 Lead ppm ASTM D5185m >40 0 <1	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <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 <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	Aluminum	ppm	ASTM D5185m	>20	11	11	7
Tin	Lead	ppm	ASTM D5185m	>40	0	<1	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 2 3 Barium ppm ASTM D5185m 0 0 <1 5 Molybdenum ppm ASTM D5185m 0 0 <1 <1 <1 Molybdenum ppm ASTM D5185m 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	Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	<1
Barium ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 60 62 63 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 953 934 908 Calcium ppm ASTM D5185m 1070 1048 1078 1064 Phosphorus ppm ASTM D5185m 1150 974 933 988 Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 225 8 8 7 Sodium ppm ASTM D5185m 20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4	Boron	ppm	ASTM D5185m	0	<1	2	3
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 953 934 908 Calcium ppm ASTM D5185m 1070 1048 1078 1064 Phosphorus ppm ASTM D5185m 1150 974 933 988 Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D	Barium	ppm	ASTM D5185m	0	0	<1	5
Magnesium ppm ASTM D5185m 1010 953 934 908 Calcium ppm ASTM D5185m 1070 1048 1078 1064 Phosphorus ppm ASTM D5185m 1150 974 933 988 Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm <	Molybdenum	ppm	ASTM D5185m	60	60	62	63
Calcium ppm ASTM D5185m 1070 1048 1078 1064 Phosphorus ppm ASTM D5185m 1150 974 933 988 Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 974 933 988 Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs	Magnesium	ppm	ASTM D5185m	1010	953	934	908
Zinc ppm ASTM D5185m 1270 1214 1161 1175 Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m >20 20 22 20 Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Calcium	ppm	ASTM D5185m	1070	1048	1078	1064
Sulfur ppm ASTM D5185m 2060 2825 3269 2930 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m 4 3 0 Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Phosphorus	ppm	ASTM D5185m	1150	974	933	988
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m 4 3 0 Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Zinc	ppm	ASTM D5185m	1270	1214	1161	1175
Silicon ppm ASTM D5185m >25 8 8 7 Sodium ppm ASTM D5185m 4 3 0 Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Sulfur	ppm	ASTM D5185m	2060	2825	3269	2930
Sodium ppm ASTM D5185m 4 3 0 Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 20 22 20 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Silicon	ppm	ASTM D5185m	>25	8	8	7
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Sodium	ppm	ASTM D5185m		4	3	0
Soot % % *ASTM D7844 >4 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Potassium	ppm	ASTM D5185m	>20	20	22	20
Nitration Abs/cm *ASTM D7624 >20 7.3 6.8 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.3 18.7 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Soot %	%	*ASTM D7844	>4	0.4	0.4	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Nitration	Abs/cm	*ASTM D7624	>20	7.3	6.8	6.2
Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.3 14.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.3	18.7	18.3
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.8	14.3	14.1
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.5	7.8	8.3



OIL ANALYSIS REPORT

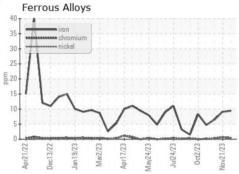


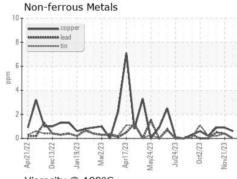


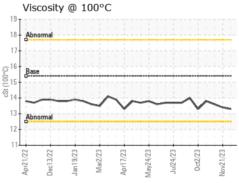
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

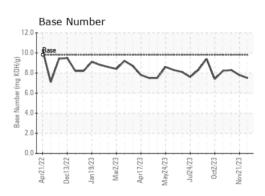
FLUID PROPE	RHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.4	13.6

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0091261 : 06030185 : 10779976

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Dec 2023 Diagnosed

: 12 Dec 2023 Diagnostician : Wes Davis

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)

T:

F: