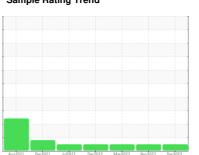


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 564M Component **Diesel Engine** PETRO CANADA DURON SHP 15W40 (--- 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

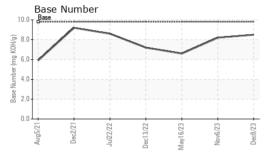
Fluid Condition

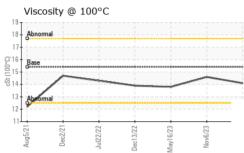
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			Aug2021	Dec2021 Jul2022	Dec2022 May2023 Nov2023	Dec2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0105578	GFL0093149	GFL0081444
Oil Age hrs Client Info 11371 10529 9778 Oil Changed Sample Status Client Info Changed Chang	Sample Date		Client Info		08 Dec 2023	06 Nov 2023	16 May 2023
Oil Changed Sample Status Client Info Changed NORMAL Changed NoRMAD Changed NoEG NoRMAL Changed NoEG NoEG NoE	Machine Age	hrs	Client Info		11535	11371	10529
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		11371	10529	9778
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
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 >90 9 17 47 Chromium ppm ASTM D5185m >20 <1	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	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	9	17	47
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 1 0 1 Tin ppm ASTM D5185m >15 0 0 <1 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 <1 5 2 Barium ppm ASTM D5185m 0 <1 5 2 Barium ppm ASTM D5185m 0 <1 0 <1 Molybdenum ppm ASTM D5185m 0 <1 0 <1	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum ppm ASTM D5185m >20 1 1 5 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 1 0 1 Tin ppm ASTM D5185m >15 0 0 <1	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 1 0 1 Tin ppm ASTM D5185m >15 0 0 <1 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 <1 5 2 Barium ppm ASTM D5185m 0 <1 5 2 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 <1 Barium ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 100 1082 1050	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper ppm ASTM D5185m >330 1 0 1 Tin ppm ASTM D5185m >15 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	1	1	5
Tin ppm ASTM D5185m >15 0 0 <1 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 <1 5 2 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 <1 0 Manganese ppm ASTM D5185m 0 <1 0 <1 916 919 Calcium ppm ASTM D5185m 1010 971 916 919 919 Calcium ppm ASTM D5185m 1070 1082 1050 1080 1050 1080 1050 1080 1050 1080 1080 1080 1080 1080	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 history2 Boron ppm ASTM D5185m 0 <1 5 2 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 57 58 60 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 971 916 919 Calcium ppm ASTM D5185m 1070 1082 1050 1080 Phosphorus ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current h	Copper	ppm	ASTM D5185m	>330	1	0	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 57 58 60 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 57 58 60 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 971 916 919 Calcium ppm ASTM D5185m 1070 1082 1050 1080 Phosphorus ppm ASTM D5185m 1150 1097 973 979 Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th><1</th> <td>5</td> <td>2</td>	Boron	ppm	ASTM D5185m	0	<1	5	2
Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 971 916 919 Calcium ppm ASTM D5185m 1070 1082 1050 1080 Phosphorus ppm ASTM D5185m 1150 1097 973 979 Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m >20 <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 971 916 919 Calcium ppm ASTM D5185m 1070 1082 1050 1080 Phosphorus ppm ASTM D5185m 1150 1097 973 979 Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m	60	57	58	60
Calcium ppm ASTM D5185m 1070 1082 1050 1080 Phosphorus ppm ASTM D5185m 1150 1097 973 979 Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus ppm ASTM D5185m 1150 1097 973 979 Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m	1010	971	916	919
Zinc ppm ASTM D5185m 1270 1327 1260 1252 Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	1070	1082	1050	1080
Sulfur ppm ASTM D5185m 2060 3228 2896 3002 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	Phosphorus	ppm	ASTM D5185m	1150	1097	973	979
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	Zinc	ppm	ASTM D5185m	1270	1327	1260	1252
Silicon ppm ASTM D5185m >25 3 3 6 Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.5 8.2 11.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Sulfur	ppm	ASTM D5185m	2060	3228	2896	3002
Sodium ppm ASTM D5185m 5 2 6 Potassium ppm ASTM D5185m >20 <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.5 8.2 11.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Silicon	ppm	ASTM D5185m	>25	3	3	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.5 8.2 11.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Sodium	ppm	ASTM D5185m		5	2	6
Soot % % *ASTM D7844 >6 0.3 0.3 0.9 Nitration Abs/cm *ASTM D7624 >20 7.5 8.2 11.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Potassium	ppm	ASTM D5185m	>20	<1	0	2
Nitration Abs/cm *ASTM D7624 >20 7.5 8.2 11.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.0 20.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Soot %	%	*ASTM D7844	>6	0.3	0.3	0.9
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Nitration	Abs/cm	*ASTM D7624	>20	7.5	8.2	11.0
Oxidation Abs/.1mm *ASTM D7414 >25 15.5 16.9 21.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.0	20.6	24.3
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.5 8.2 6.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	16.9	21.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.5	8.2	6.6



OIL ANALYSIS REPORT

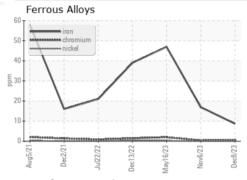


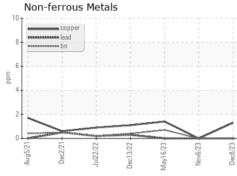


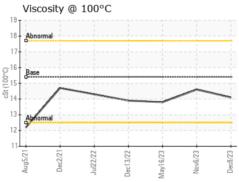
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

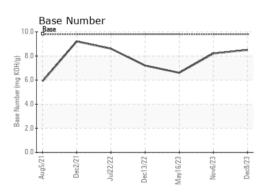
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.6	13.8

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

Unique Number : 10782039

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0105578 : 06032248

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

Received Diagnosed Diagnostician : Wes Davis

: 12 Dec 2023 : 13 Dec 2023 GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak

fwolak@gflenv.com T: (586)825-9514

* - 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)