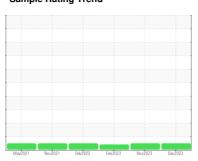


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 328M 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.

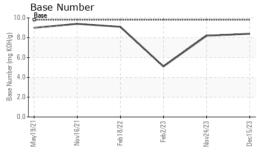
Fluid Condition

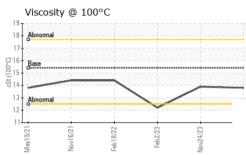
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION	GAL)		May2021	Nov2021 Feb2022	Feb 2023 Nov2023	Dec2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 25520 25421 24456 Oil Age hrs Client Info Not Changed 12834 Oil Changed Client Info Not Changed Not Changed Sample Status Client Info NoRMAL NORMAL ATTENTION CONTAMINATION method Imit base current Inistory Fuel WC Method >5 <1.0	Sample Number		Client Info		GFL0105782	GFL0089155	GFL0063985
Oil Age hrs Client Info 25421 0 21834 Oil Changed Client Info Not Changd Not Changd Not Changd Changed NoRMAL Ant Changd Changed Changed Changed Changed Changed Changed NoRMAL NoRMAL NORMAL ATTENTION CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Sample Date		Client Info		15 Dec 2023	24 Nov 2023	02 Feb 2023
Oil Changed Sample Status	Machine Age	hrs	Client Info		25520	25421	24456
CONTAMINATION	Oil Age	hrs	Client Info		25421	0	21834
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 0.5 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >>110 11 9 13 Chromium ppm ASTM D5185m >>4 <1 <1 <1 <1 <1 <1 <1 <1 <1 <0 <1 <0 <0 <1 <0 <0 <0 <1 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Not Changd</th> <th>Not Changd</th> <th>Changed</th>	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Fuel	Sample Status				NORMAL	NORMAL	ATTENTION
Water Glycol WC Method Glycol NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >110 11 9 13 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1 <1 0 0 Silver ppm ASTM D5185m >2 0 <1 0 0 Silver ppm ASTM D5185m >2 0 <1 0 0 Silver ppm ASTM D5185m >2 0 <1 0 <t< th=""><th>CONTAMINATI</th><th>ON</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	CONTAMINATI	ON	method	limit/base	current	history1	history2
Company Comp	Fuel		WC Method	>5	<1.0	<1.0	0.5
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm		>110	11	9	13
Titanium	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver	Nickel	ppm		>2			
Aluminum ppm ASTM D5185m >25 2 2 0 Lead ppm ASTM D5185m >45 2 3 5 Copper ppm ASTM D5185m >85 1 2 <1	Titanium	ppm	ASTM D5185m		<1	0	
Lead	Silver	ppm		>2	0		
Copper ppm ASTM D5185m >85 1 2 <1 Tin ppm ASTM D5185m Antimony 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 8 <1	Aluminum	ppm	ASTM D5185m	>25	2	2	0
Tin ppm ASTM D5185m >4 <1 <1 <1 Antimony ppm ASTM D5185m —— —— —— 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 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1270 1228 1252 1060	Lead	ppm	ASTM D5185m	>45	2	3	5
Antimony ppm ASTM D5185m 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 8 <1 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 1 4 Manganese ppm ASTM D5185m 0 0 <1 <1 4 Magnesium ppm ASTM D5185m 1070 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 32	Copper	ppm	ASTM D5185m	>85	1	2	<1
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 8 <1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1070 1034 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1	Tin	ppm	ASTM D5185m	>4	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 8 <1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon <td>Antimony</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th></th> <td></td> <td></td>	Antimony	ppm	ASTM D5185m				
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 8 <1	Vanadium	ppm	ASTM D5185m				
Boron ppm ASTM D5185m 0 2 8 <1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 55 48 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base curren	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 58 55 48 Manganese ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 58 55 48 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>2</th> <td>8</td> <td><1</td>	Boron	ppm	ASTM D5185m	0	2	8	<1
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D784	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 918 889 730 Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D	Molybdenum	ppm			58	55	48
Calcium ppm ASTM D5185m 1070 1034 1065 848 Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 0.6 0.5 0.4 Nitration Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 <	•	ppm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 1150 1054 1121 858 Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >30 5 5 3 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 0.6 0.5 0.4 Nitration Abs/.1mm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION met	Magnesium	ppm	ASTM D5185m	1010	918	889	730
Zinc ppm ASTM D5185m 1270 1228 1252 1060 Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/.1mm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <t< td=""><td>Calcium</td><td>ppm</td><td>ASTM D5185m</td><td>1070</td><th>1034</th><td>1065</td><td>848</td></t<>	Calcium	ppm	ASTM D5185m	1070	1034	1065	848
Sulfur ppm ASTM D5185m 2060 3290 3105 2219 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m >20 3 2 1 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Phosphorus	ppm	ASTM D5185m	1150	1054	1121	858
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m 4 4 5 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Zinc	ppm	ASTM D5185m	1270	1228	1252	1060
Silicon ppm ASTM D5185m >30 5 5 3 Sodium ppm ASTM D5185m 4 4 5 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Sulfur	ppm	ASTM D5185m	2060	3290	3105	2219
Sodium ppm ASTM D5185m 4 4 5 Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 2 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Silicon	ppm	ASTM D5185m	>30	5	5	3
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Sodium	ppm	ASTM D5185m		4	4	5
Soot % % *ASTM D7844 >3 0.6 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Potassium	ppm	ASTM D5185m	>20	3	2	1
Nitration Abs/cm *ASTM D7624 >20 9.4 8.2 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.6 20.5 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Soot %	%	*ASTM D7844	>3	0.6	0.5	0.4
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2517.116.220.2	Nitration	Abs/cm	*ASTM D7624	>20	9.4	8.2	9.9
Oxidation Abs/.1mm *ASTM D7414 >25 17.1 16.2 20.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.6	20.5	23.3
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.4 8.2 5.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.1	16.2	20.2
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	8.2	5.1



OIL ANALYSIS REPORT

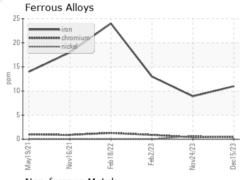


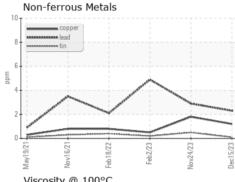


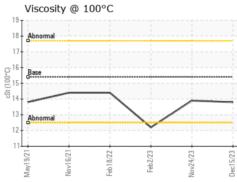
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

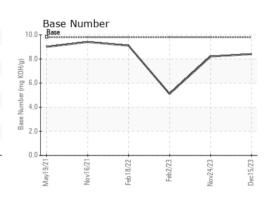
FLUID FROF	EULIES	memod			HISTORY	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.9	▲ 12.2

GRAPHS











Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

Unique Number : 10794313

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0105782 : 06039084

Diagnosed

Recieved : 19 Dec 2023 : 20 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 415 - Michigan East 6200 Elmridge

Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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)