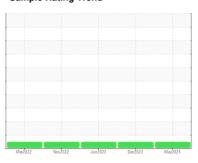


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id 125013-1122

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

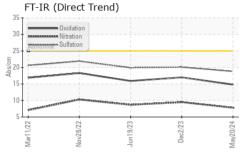
Fluid Condition

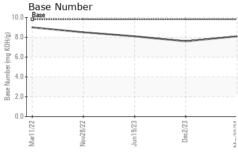
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

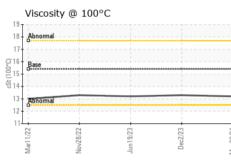
SAMPLE INFORMATION method limit/base current history1 history2	JAL)		Mar2022	NovŽ022	Jun2023 Dec2023	May2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0099634	GFL0061042	GFL0030395
Machine Age hrs Client Info 490 6175 6175 Oil Age hrs Client Info 490 610 580 Oil Changed Client Info Changed Chang			Client Info		20 May 2024	02 Dec 2023	19 Jun 2023
Oil Age hrs Client Info 490 610 580 Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed NORMAL NOR	•	hrs	Client Info		-	6779	6175
Sample Status	•	hrs	Client Info		490	610	580
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
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 18 13 Chromium ppm ASTM D5185m >4 <1 1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Sliver ppm ASTM D5185m >2 0 0 0 Sliver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 5 1 Lead ppm ASTM D5185m >45 <1 <1 <1 Copper ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <7 7 13 Barium ppm ASTM D5185m 0 <7 7	CONTAMINAT	ION	method	limit/base	current	history1	history2
Second WC Method NEG NEG NEG	Fuel		WC Method	>5	<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 >4 <1 1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 5 1 1 Lead ppm ASTM D5185m >45 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>110	11	18	13
Titanium ppm ASTM D5185m <1 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 5 1 Lead ppm ASTM D5185m >45 -1 <1	Chromium	ppm	ASTM D5185m	>4	<1	1	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 5 1 Lead ppm ASTM D5185m >45 <1 <1 0 Copper ppm ASTM D5185m >4 <1 <1 <1 Tin ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Cadmium ppm ASTM D5185m 0 <1 <1 <1 Cadmium ppm ASTM D5185m 0 <7 7 13 Boron ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1102	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	<1
Lead ppm ASTM D5185m >45 <1 <1 0 Copper ppm ASTM D5185m >85 1 1 <1 <1 Tin ppm ASTM D5185m >4 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 <1 Cadmium ppm ASTM D5185m 0 <1 <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 0 <1 0 0 ADJUTIVES method limit/base current history1 history2 Barium p	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >85 1 1 <1 <1 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>25	2	5	1
Tin ppm ASTM D5185m >4 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 7 13 Barium ppm ASTM D5185m 0 <1	Lead	ppm	ASTM D5185m	>45	<1	<1	0
Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 7 13 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 937 1026 889 Calcium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1070 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base	Copper	ppm	ASTM D5185m	>85	1	1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 7 13 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 <1 Magnese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2	Tin	ppm	ASTM D5185m	>4	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	<1
Boron ppm ASTM D5185m 0 7 7 13 Barium ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 65 64 59 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 937 1026 889 Calcium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1070 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Boron	ppm	ASTM D5185m	0			
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 937 1026 889 Calcium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1150 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Barium	ppm					
Magnesium ppm ASTM D5185m 1010 937 1026 889 Calcium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1150 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 <td></td> <td>ppm</td> <td></td> <td></td> <th></th> <td></td> <td></td>		ppm					
Calcium ppm ASTM D5185m 1070 1102 1184 1182 Phosphorus ppm ASTM D5185m 1150 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION lim	-	ppm	ASTM D5185m				
Phosphorus ppm ASTM D5185m 1150 1122 1080 986 Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414<	-	ppm					
Zinc ppm ASTM D5185m 1270 1244 1324 1214 Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9		ppm					
Sulfur ppm ASTM D5185m 2060 3286 3026 3299 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m >0 1 2 Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m 0 1 2 Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9							
Silicon ppm ASTM D5185m >30 4 6 4 Sodium ppm ASTM D5185m 0 1 2 Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9			ASTM D5185m	2060	3286	3026	3299
Sodium ppm ASTM D5185m 0 1 2 Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9		ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 6 15 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9				>30			
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9		ppm			0		
Soot % % *ASTM D7844 >3 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9	Potassium	ppm	ASTM D5185m	>20	6	15	5
Nitration Abs/cm *ASTM D7624 >20 7.8 9.5 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.8 20.1 19.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9	Soot %	%	*ASTM D7844	>3	0.3		
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 17.0 15.9	Nitration	Abs/cm	*ASTM D7624	>20	7.8	9.5	8.7
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.8	20.1	19.9
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 7.6 8.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.8	17.0	15.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.1	7.6	8.1



OIL ANALYSIS REPORT



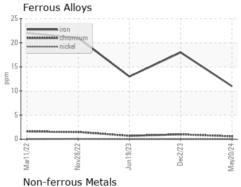


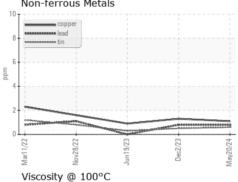


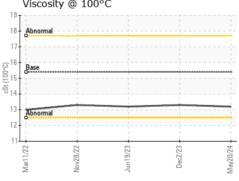
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

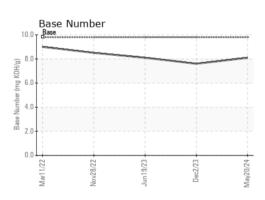
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.3	13.2

GRAPHS













Laboratory Sample No.

: GFL0099634 Lab Number : 06196323 Unique Number : 11058446

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

: 31 May 2024 : 03 Jun 2024 : 03 Jun 2024 - Wes Davis

GFL Environmental - 633 - Grand Haven

1680 Peach St Whitehall, MI US 49461 Contact: Derek Kater

dkater@gflenv.com

Submitted By: Derek Kater

Test Package : FLEET Certificate 12367 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: