

OIL ANALYSIS REPORT

Sample Rating Trend

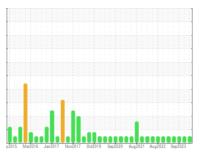
NORMAL



(YA150020) Machine Id 10618 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (5 GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Moor

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

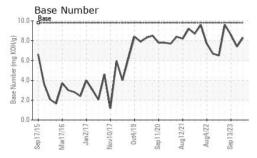
Fluid Condition

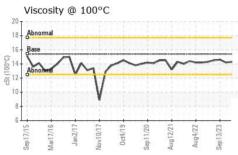
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0098143 GFL0098099 GFL008854 Sample Date Client Info 07 Feb 2024 20 Dec 2023 13 Sep 2023 13 Sep 2023 14	OAMBLE WEST	AATION		6 Jan2017 Nov2017 Oc		Sep2023	
Sample Date	SAMPLE INFORM	MOTTAN	method	limit/base	current	history1	history2
Machine Age hrs Client Info 14699 14	Sample Number		Client Info		GFL0098143	GFL0098099	GFL0088541
Oil Age hrs Client Info 215 476 324 Oil Changed Client Info N/A N/A N/A N/A Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method 3-0.2 NEG NEG NEG Water WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 10 20 12 Chromium ppm ASTM D5185m >90 10 20 12 Chromium ppm ASTM D5185m >90 10 20 12 Iron ppm ASTM D5185m >20 0 0 0 Iron ppm ASTM D5185m >20 0 0 0 Gliver ppm <th>Sample Date</th> <th></th> <th></th> <th></th> <th>07 Feb 2024</th> <th>20 Dec 2023</th> <th>13 Sep 2023</th>	Sample Date				07 Feb 2024	20 Dec 2023	13 Sep 2023
Cilient Info	Machine Age	hrs	Client Info		14699	14699	14699
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs			215	476	324
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Oil Changed		Client Info		N/A	N/A	N/A
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 10 20 12 Chromium ppm ASTM D5185m >20 <1	CONTAMINATI	ON	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 METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	10	20	12
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	2	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 6 2 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 <1 2 1 Tin ppm ASTM D5185m >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 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 <1 <1 <1 <1 <1 <1 <1 <1	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum ppm ASTM D5185m >20 2 6 2 Lead ppm ASTM D5185m >40 0 0 <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 <1 2 1 Tin ppm ASTM D5185m >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 3 4 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 Mary ASTM D5185m	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <1 2 1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	2	6	2
Tin ppm ASTM D5185m >15 <1 <1 <1 <1 O Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 63 62 Manganese ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >6 0.4 0.6 0.4 Nitration Abs/.1mm "ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Soxidation Abs/.1mm "ASTM D7414 >25 15.2 17.3 15.5	Lead	ppm	ASTM D5185m	>40	0	0	<1
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 3 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 56 63 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current <th< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>330</td><th><1</th><td>2</td><td>1</td></th<>	Copper	ppm	ASTM D5185m	>330	<1	2	1
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 3 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 63 62 Manganese ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 63 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/ba	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 63 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1 2 1 Potassium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/base <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>3</th> <td>3</td> <td>4</td>	Boron	ppm	ASTM D5185m	0	3	3	4
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1 2 1 Potassium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 909 999 1046 Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1 2 1 Potassium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.6 0.4 Nitration Abs/.1mm *ASTM D7415 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>56</th> <td>63</td> <td>62</td>	Molybdenum	ppm	ASTM D5185m	60	56	63	62
Calcium ppm ASTM D5185m 1070 915 1180 1230 Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1006 1126 1103 Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m	1010	909	999	1046
Zinc ppm ASTM D5185m 1270 1223 1375 1357 Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	1070	915	1180	1230
Sulfur ppm ASTM D5185m 2060 2795 3188 3879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m >20 <1	Phosphorus	ppm	ASTM D5185m	1150	1006	1126	1103
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m <1	Zinc	ppm	ASTM D5185m	1270	1223	1375	1357
Silicon ppm ASTM D5185m >25 4 10 6 Sodium ppm ASTM D5185m <1 2 1 Potassium ppm ASTM D5185m >20 <1 3 4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 7.5 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Sulfur	ppm	ASTM D5185m	2060	2795	3188	3879
Sodium ppm ASTM D5185m <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1	Silicon	ppm	ASTM D5185m	>25	4	10	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 7.5 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Sodium	ppm	ASTM D5185m		<1	2	1
Soot % % *ASTM D7844 >6 0.4 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 7.5 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Potassium	ppm	ASTM D5185m	>20	<1	3	4
Nitration Abs/cm *ASTM D7624 >20 7.5 9.2 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.9 20.5 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Soot %	%	*ASTM D7844	>6	0.4	0.6	0.4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Nitration	Abs/cm	*ASTM D7624	>20	7.5	9.2	8.1
Oxidation Abs/.1mm *ASTM D7414 >25 15.2 17.3 15.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.9	20.5	19.2
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.3 7.4 8.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.2	17.3	15.5
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	7.4	8.6



OIL ANALYSIS REPORT

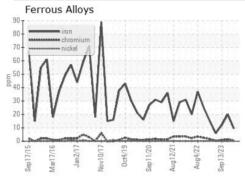


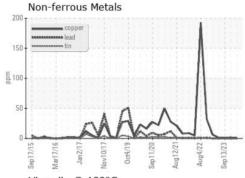


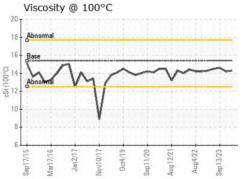
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

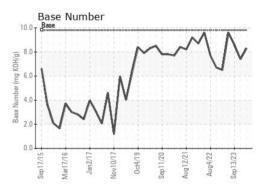
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.2	14.6

GRAPHS













Certificate L2367

Laboratory Sample No.

: GFL0098143 Lab Number : 06082380 Unique Number: 10869825 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 07 Feb 2024 **Tested** : 08 Feb 2024

Diagnosed : 08 Feb 2024 - Wes Davis

GFL Environmental - 017 - Durham

148 Stone Park Court Durham, NC

US 27703 Contact:

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

bill.waring@wearcheck.com T: (919)596-1363 F: (919)598-1852

* - 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)