

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



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.

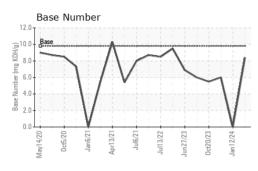
Fluid Condition

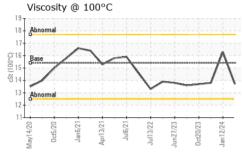
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108303	GFL0098232	GFL0098192
Sample Date		Client Info		19 Feb 2024	12 Jan 2024	25 Oct 2023
Machine Age	mls	Client Info		177140	177139	177135
Oil Age	mls	Client Info		177136	177139	177135
Oil Changed		Client Info		Not Changd	N/A	N/A
Sample Status				NORMAL	SEVERE	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS method limit/base current history1 history						
Iron	ppm	ASTM D5185m	>110	5	230	42
Chromium	ppm	ASTM D5185m	>4	<1	<u> </u>	3
Nickel	ppm	ASTM D5185m	>2	<1	1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum	ppm	ASTM D5185m	>25	1	9	3
Lead	ppm	ASTM D5185m	>45	0	18	4
Copper	ppm	ASTM D5185m	>85	0	8	2
Tin	ppm	ASTM D5185m	>4	<1	2	1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 14	history1 7	history2 7
	ppm ppm					
Boron		ASTM D5185m	0	14	7	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	14 0	7 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	14 0 52	7 0 55	7 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	14 0 52 <1	7 0 55 3	7 0 61 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	14 0 52 <1 845	7 0 55 3 917 1056 1021	7 0 61 <1 936 1092 1033
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	14 0 52 <1 845 999	7 0 55 3 917 1056	7 0 61 <1 936 1092 1033 1279
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	14 0 52 <1 845 999 971	7 0 55 3 917 1056 1021	7 0 61 <1 936 1092 1033
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	14 0 52 <1 845 999 971 1163	7 0 55 3 917 1056 1021 1224	7 0 61 <1 936 1092 1033 1279
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	14 0 52 <1 845 999 971 1163 2883	7 0 55 3 917 1056 1021 1224 2483	7 0 61 <1 936 1092 1033 1279 2699
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	14 0 52 <1 845 999 971 1163 2883 current	7 0 55 3 917 1056 1021 1224 2483 history1	7 0 61 <1 936 1092 1033 1279 2699 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	14 0 52 <1 845 999 971 1163 2883 current 4	7 0 55 3 917 1056 1021 1224 2483 history1 10	7 0 61 <1 936 1092 1033 1279 2699 history2 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	14 0 52 <1 845 999 971 1163 2883 <u>current</u> 4 2	7 0 55 3 917 1056 1021 1224 2483 history1 10 6	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30	14 0 52 <1 845 999 971 1163 2883 current 4 2 2 2	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30	14 0 52 <1 845 999 971 1163 2883 current 4 2 2 2 2	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4 4	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	14 0 52 <1 845 999 971 1163 2883 <u>current</u> 4 2 2 2 <u>current</u> 0.2	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4 4 history1	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46 history2 1.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 200 limit/base >30	14 0 52 <1 845 999 971 1163 2883 <u>current</u> 4 2 2 2 <u>current</u> 0.2 6.2	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4 4 history1 10 5.8 13.1	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46 history2 1.1 1.1 10.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 20	14 0 52 <1 845 999 971 1163 2883 current 4 2 2 2 current 0.2 6.2 18.1	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4 4 history1 ♦ 5.8 13.1 30.1	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46 history2 1.1 10.5 22.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	14 0 52 <1 845 999 971 1163 2883 Current 4 2 2 2 Current 0.2 6.2 18.1	7 0 55 3 917 1056 1021 1224 2483 history1 10 6 4 4 bistory1 \$5.8 13.1 30.1 bistory1	7 0 61 <1 936 1092 1033 1279 2699 history2 9 11 46 history2 1.1 10.5 22.8 history2



OIL ANALYSIS REPORT





VISUAL		method				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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	16.3	13.8
GRAPHS						

Ferrous Alloys 250 200 150 mqq 100 50 4/20 Jan6/21 Apr13/21 Jan 12/24 CULCUM Mav14 Non-ferrous Metals 18 14 14 12 10 Jan 12/24 Dct5/ /lav1 Viscosity @ 100°C Base Number 19 12.0 18 10. 17 (mg KOH/g) ()-00 15 8 (B 6.0 nber 5 14 Base Nun 4.0 Abn 21 12 11 0.0 0ct5/20 -Jan6/21 Apr13/21 Jul13/22 Jun27/23 Jan 12/24 Jan6/21 Apr13/21 Jun27/23 May14/20 Jul6/21 May14/20 Jul6/21 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 652 - Fredericksburg Hauling Sample No. : GFL0108303 Received : 21 Feb 2024 10954 Houser Drive

: 22 Feb 2024

: 22 Feb 2024 - Wes Davis

Test Package : FLEET Certificate L2367 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)

Tested

Diagnosed

Report Id: GFL652 [WUSCAR] 06096038 (Generated: 02/22/2024 12:32:30) Rev: 1

Laboratory

Lab Number : 06096038

Unique Number : 10888891

Submitted By: TECHNICIAN ACCOUNT

Jan 12/24

US 22408

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Contact: WILLIAM MILO