

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Machine Id 929095-260368

Component Diesel Engine

Fluid 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 INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0087915	GFL0068558	GFL0056952
Sample Date		Client Info		27 Feb 2024	12 Apr 2023	28 Feb 2023
Machine Age	mls	Client Info		0	143116	34936
Oil Age	mls	Client Info		0	0	600
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	ATTENTION	SEVERE
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	▲ 0.12
WEAR METAL	s	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>100	28	9	22
Chromium	ppm		>20	20	<1	2
Nickel	ppm	ASTM D5185m	>20	2 <1	<1	2
Titanium	ppm	ASTM D5185m	~	<1	0	<1
Silver	ppm ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	5	0	4
Lead	ppm		>20	0	0	4 <1
Copper	ppm		>330	13	5	38
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m	210	0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
	maa					
Boron	ppm pom	ASTM D5185m	limit/base 0 0	current <1 0	<1	history2 6 0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1		6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m	0	<1 0	<1 0	6
Boron Barium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 62	<1 0 67	6 0 172
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 62 <1	<1 0 67 <1	6 0 172 2
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 62 <1 951	<1 0 67 <1 906	6 0 172 2 816
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 0 62 <1 951 1056	<1 0 67 <1 906 1091	6 0 172 2 816 942
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	<1 0 62 <1 951 1056 1017	<1 0 67 <1 906 1091 1016	6 0 172 2 816 942 902
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	<1 0 62 <1 951 1056 1017 1243	<1 0 67 <1 906 1091 1016 1231	6 0 172 2 816 942 902 1116
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	0 0 60 0 1010 1070 1150 1270 2060	<1 0 62 <1 951 1056 1017 1243 3046	<1 0 67 <1 906 1091 1016 1231 3313	6 0 172 2 816 942 902 1116 2796
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	0 0 60 0 1010 1070 1150 1270 2060	<1 0 62 <1 951 1056 1017 1243 3046 current	<1 0 67 <1 906 1091 1016 1231 3313 history1	6 0 172 2 816 942 902 1116 2796 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	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	<1 0 62 <1 951 1056 1017 1243 3046 <i>current</i> 10	<1 0 67 <1 906 1091 1016 1231 3313 history1 3	6 0 172 2 816 942 902 1116 2796 history2 10
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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	<1 0 62 <1 951 1056 1017 1243 3046 <u>current</u> 10 18	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 3 136	6 0 172 2 816 942 902 1116 2796 history2 10 2898
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 >25	<1 0 62 <1 951 1056 1017 1243 3046 <u>current</u> 10 18 16	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 3 136 8	6 0 172 2 816 942 902 1116 2796 history2 10 ≥ 2898 139
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	<1 0 62 <1 951 1056 1017 1243 3046 <u>current</u> 10 18 16 <u>current</u>	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 136 8 history1	6 0 172 2 816 942 902 1116 2796 history2 10 2898 ▲ 139 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	<1 0 62 <1 951 1056 1017 1243 3046 <u>current</u> 10 18 16 <u>current</u>	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 3 136 8 history1 0.3	6 0 172 2 816 942 902 1116 2796 history2 10 2898 ▲ 139 history2 0.3
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	<1 0 62 <1 951 1056 1017 1243 3046 <i>current</i> 10 18 16 <i>current</i> 0.5 10.7	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 3 136 8 history1 0.3 6.2	6 0 172 2 816 942 902 1116 2796 history2 10 2898 ▲ 139 history2 0.3 11.6
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 TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 33 220 330 20 330	<1 0 62 <1 951 1056 1017 1243 3046 Current 10 18 16 Current 0.5 10.7 21.5 Current	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 136 8 history1 0.3 6.2 16.8 history1	6 0 172 2 816 942 902 1116 2796 history2 10 2898 139 history2 0.3 11.6 20.1 history2
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 320 33 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 0 62 <1 951 1056 1017 1243 3046 <u>current</u> 10 18 16 <u>current</u> 0.5 10.7 21.5	<1 0 67 <1 906 1091 1016 1231 3313 history1 3 3 136 8 <u>history1</u> 0.3 6.2 16.8	6 0 172 2 816 942 902 1116 2796 history2 10 2898 ▲ 139 history2 0.3 11.6 20.1



Bas

13 Abnormal

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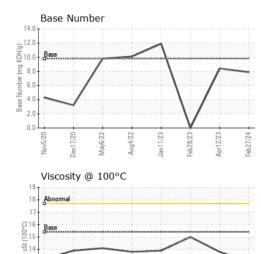
Nov5/20 -

Dec17/20

May6/22

OIL ANALYSIS REPORT

VISUAI



Aug4/22

Jan 11/23

Feb 28/23

Apr12/23

	method	limit/base	current	history i	nistory2
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NONE	NONE	NONE	NONE
scalar	*Visual	NORML	NORML	NORML	NORML
scalar	*Visual	NORML	NORML	NORML	NORML
scalar	*Visual	>0.2		NEG	NEG
scalar	*Visual		NEG	NEG	NEG
RTIES	method	limit/base	current	history1	history2
cSt	ASTM D445	15.4	13.0	13.8	15.0
Aug ⁺ /22	eb 28/23	eb27/24			
 S	F 4	LL.			
	\wedge				
1/23	12/23	27/24			
Jan11/23	Feb28/23 Apr12/23	Feb27/24			
	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	scalar *Visual scalar *Visual	scalar *Visual NONE scalar *Visual NONE scalar *Visual NONE scalar *Visual NONE scalar *Visual NONE scalar *Visual NONE scalar *Visual NORML scalar *Visual NORML scalar *Visual >0.2 scalar *Visual >0.2 scalar *Visual Sole scalar *Visual NORML	scalar *Visual NONE NONE scalar *Visual NORML NORML scalar *Visual NORML NORML scalar *Visual >0.2 NEG scalar *Visual >0.2 NEG scalar *Visual 15.4 13.0	scalar *Visual NONE NONE NONE NONE scalar *Visual NONE NONE NONE NONE scalar *Visual NONE NONE NONE scalar *Visual NONE NONE NONE scalar *Visual NONE NONE NONE scalar *Visual NORML NORML NORML scalar *Visual NORML NORML NORML scalar *Visual >0.2 NEG NEG scalar *Visual >0.2 NEG NEG scalar *Visual >0.2 NEG NEG scalar *Visual >0.2 NEG NEG scalar *Visual >0.2 NEG NEG

14.0 18 12.0 17 (B/HO) 10.0 16 (100°C) 15 14 (mg k Ba 8.0 mber 6.0 3ase 4 (13 Abnorma 2.0 12 11-0.0 May6/22 -Apr12/23 . Feb27/24. Aug4/22 -Aug4/22 Jan11/23 Jan11/23 Feb28/23 Apr12/23 Feb27/24 Feb28/23 Dec17/20 Nov5/20 Dec17/20 Vov5/20 Mav6/22 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 859 - Bay City Laboratory Sample No. : GFL0087915 Received : 28 Feb 2024 700 Avenue F Lab Number : 06102803 Tested : 29 Feb 2024 Bay City, TX Unique Number : 10901033 Diagnosed : 29 Feb 2024 - Wes Davis US 77414 Test Package : FLEET Contact: JONATHON BROWN Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jonathon.brown@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: