

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 3765

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

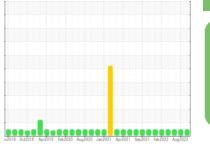
All component wear rates are normal.

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.

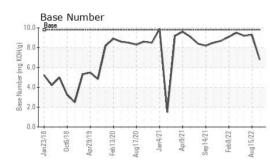


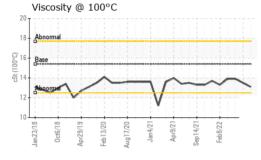


SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0072238	GFL0049633	GFL0049626
Sample Date		Client Info		08 Aug 2023	15 Aug 2022	30 Mar 2022
Machine Age	mls	Client Info		277401	277401	277401
Oil Age	mls	Client Info		15370	277401	277401
Oil Changed		Client Info		Changed	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	>0.0	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>165	17	10	6
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m		3	3	2
Lead	ppm	ASTM D5185m	>150	2	2	<1
Copper	ppm	ASTM D5185m	>90	1	1	<1
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		<1	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 6	history1 7	history2 17
	ppm ppm					
Boron		ASTM D5185m	0	6	7	17
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	6 1	7 0	17 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 1 64	7 0 62	17 0 58
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 1 64 <1	7 0 62 <1	17 0 58 <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	6 1 64 <1 950	7 0 62 <1 890	17 0 58 <1 908
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	6 1 64 <1 950 1098	7 0 62 <1 890 1094	17 0 58 <1 908 1187
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	6 1 64 <1 950 1098 1003	7 0 62 <1 890 1094 1027	17 0 58 <1 908 1187 1080
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	6 1 64 <1 950 1098 1003 1236	7 0 62 <1 890 1094 1027 1245	17 0 58 <1 908 1187 1080 1291
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 1010 1070 1150 1270 2060	6 1 64 <1 950 1098 1003 1236 3113	7 0 62 <1 890 1094 1027 1245 3107	17 0 58 <1 908 1187 1080 1291 2999
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 1010 1070 1150 1270 2060 limit/base	6 1 64 <1 950 1098 1003 1236 3113 current	7 0 62 <1 890 1094 1027 1245 3107 history1	17 0 58 <1 908 1187 1080 1291 2999 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 1010 1070 1150 1270 2060 limit/base >35	6 1 64 <1 950 1098 1003 1236 3113 current 15	7 0 62 <1 890 1094 1027 1245 3107 history1 6	17 0 58 <1 908 1187 1080 1291 2999 history2 8
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 1010 1070 1150 1270 2060 limit/base >35	6 1 64 <1 950 1098 1003 1236 3113 <u>current</u> 15 16	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0
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 limit/base >35	6 1 64 <1 950 1098 1003 1236 3113 current 15 16 1 1 current	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2
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 >35 >20 limit/base	6 1 64 <1 950 1098 1003 1236 3113 <u>current</u> 15 16 1	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1 1 history1	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2 history2 0.2
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 >35 >20 limit/base	6 1 64 <1 950 1098 1003 1236 3113 current 15 16 1 1 current 0.4	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1 history1 0.5	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >35 20 imit/base >20	6 1 64 <1 950 1098 1003 1236 3113 current 15 16 1 1 current 0.4 7.7	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1 history1 0.5 9.3	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2 history2 0.2 7.2
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	0 0 0 1010 1070 1150 1270 2060 imit/base >35 20 imit/base >7.5 >20 >30	6 1 64 <1 950 1098 1003 1236 3113 Current 15 16 1 16 1 Current 0.4 7.7 18.8 Current	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1 6 3 1 0.5 9.3 21.8 history1	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2 history2 0.2 7.2 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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >35 -20 imit/base >7.5 >20	6 1 64 <1 950 1098 1003 1236 3113 <u>current</u> 15 16 1 <u>current</u> 0.4 7.7 18.8	7 0 62 <1 890 1094 1027 1245 3107 history1 6 3 1 history1 0.5 9.3 21.8	17 0 58 <1 908 1187 1080 1291 2999 history2 8 0 2 <u>history2</u> 0.2 7.2 20.1



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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.1	13.5	13.9
GRAPHS						

Ferrous Alloys

30

19

18 17

16 cSt (100°C)

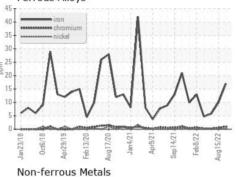
10

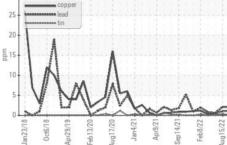
Laboratory

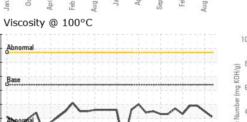
Jan23/18

Apr29/19

0ct6/18



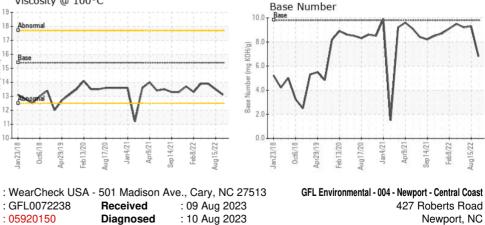




Aug17/20

Feb 13/20

an4/21 Apr9/21



Sample No. : GFL0072238 Received : 09 Aug 2023 Lab Number Diagnosed : 10 Aug 2023 : 05920150 : 10592064 Unique Number Diagnostician : Wes Davis US 28570 Test Package : FLEET Contact: Marguis Williams To discuss this sample report, contact Customer Service at 1-800-237-1369. marquis.williams@gflenv.com * - 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) F: (252)223-6010

Aug15/22

Sep14/21 Feb 8/22

Submitted By: GFL004 and GLF112 - Marquis Williams

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