

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



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 INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0118216	GFL0118192	GFL0109124
Sample Date		Client Info		10 Jun 2024	15 May 2024	28 Mar 2024
Machine Age	hrs	Client Info		17362	17192	16916
Oil Age	hrs	Client Info		700	700	600
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	MARGINAL	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	2 .2	▲ 8.3
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	6	8	15
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	2	2	2
Lead	ppm	ASTM D5185m	>45	<1	1	1
Copper	ppm	ASTM D5185m	>85	<1	<1	2
Tin	ppm	ASTM D5185m	>4	<1	<1	<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	current	history1 0	history2 2
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	1	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	1 0	0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 57	0 0 59	2 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 57 <1	0 0 59 0	2 0 56 <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 1070 1150	1 0 57 <1 1027	0 0 59 0 904	2 0 56 <1 911 999 1001
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	1 0 57 <1 1027 1183	0 0 59 0 904 1050	2 0 56 <1 911 999
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	0 0 60 0 1010 1070 1150	1 0 57 <1 1027 1183 1079	0 0 59 0 904 1050 988	2 0 56 <1 911 999 1001
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 57 <1 1027 1183 1079 1361	0 0 59 0 904 1050 988 1183	2 0 56 <1 911 999 1001 1213
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 57 <1 1027 1183 1079 1361 3622	0 0 59 0 904 1050 988 1183 2927 history1 4	2 0 56 <1 911 999 1001 1213 3203 history2 4
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	1 0 57 <1 1027 1183 1079 1361 3622 current	0 0 59 0 904 1050 988 1183 2927 history1 4 4	2 0 56 <1 911 999 1001 1213 3203 history2
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 0 1010 1070 1150 1270 2060 limit/base	1 0 57 <1 1027 1183 1079 1361 3622 current 3	0 0 59 0 904 1050 988 1183 2927 history1 4	2 0 56 <1 911 999 1001 1213 3203 history2 4
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	1 0 57 <1 1027 1183 1079 1361 3622 current 3 3 3	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1	2 0 56 <1 911 999 1001 1213 3203 history2 4 4
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	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	1 0 57 <1 1027 1183 1079 1361 3622 current 3 3 0 current 0.3	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1 0.3	2 0 56 <1 911 999 1001 1213 3203 history2 4 4 4 0 bistory2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 -20	1 0 57 <1 1027 1183 1079 1361 3622 current 3 3 3 0 current	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1	2 0 56 <1 911 999 1001 1213 3203 history2 4 4 4 0 bistory2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 limit/base >20	1 0 57 <1 1027 1183 1079 1361 3622 current 3 3 0 current 0.3	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1 0.3	2 0 56 <1 911 999 1001 1213 3203 history2 4 4 4 0 bistory2 0.7
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 imit/base >30 220 imit/base >3 >20	1 0 57 <1 1027 1183 1079 1361 3622 <i>current</i> 3 3 0 <i>current</i> 0.3 8.1	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1 0.3 10.9	2 0 56 <1 911 999 1001 1213 3203 history2 4 4 4 0 Vhistory2 0.7 9.8
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 20	1 0 57 <1 1027 1183 1079 1361 3622 <u>current</u> 3 3 0 <u>current</u> 0.3 8.1 19.0	0 0 59 0 904 1050 988 1183 2927 history1 4 4 2 2 history1 0.3 10.9 22.8	2 0 56 <1 911 999 1001 1213 3203 history2 4 4 4 0 history2 0.7 9.8 20.0



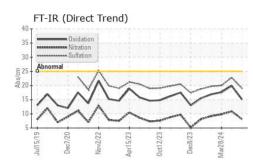
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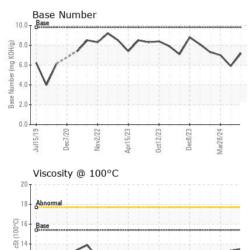
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10 Jul15/19

OIL ANALYSIS REPORT





pr15/23

Dec8/23

Mar28/24

17

16 cSt (100°C)

12

10

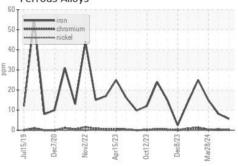
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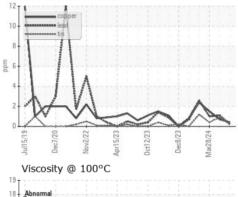
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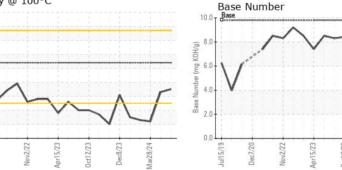
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	13.5	13.3	1 1.2
GRAPHS						

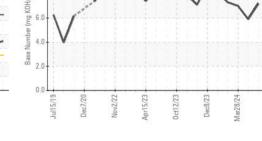
Ferrous Alloys

Non-ferrous Metals









Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 822 - Springfield Hauling Sample No. : GFL0118216 Received : 01 Jul 2024 2120 West Bennett Street Lab Number : 06224337 Tested : 02 Jul 2024 Springfield, MO ŬS 65807 Unique Number : 11102534 Diagnosed : 02 Jul 2024 - Wes Davis Test Package : FLEET Contact: Dennis Moore Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. dennis.moore@gflenv.com T: (417)403-3641 * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Submitted By: Dennis Moore