

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 819019 Component

Fluid

Diesel Engine

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.

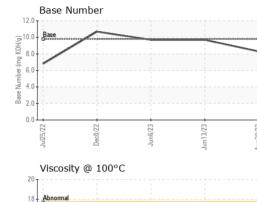
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0072534	GFL0072516	GFL0068311
Sample Date		Client Info		30 Aug 2023	13 Jun 2023	06 Jun 2023
Machine Age	hrs	Client Info		16091	16091	16091
Oil Age	hrs	Client Info		16091	16091	16091
Oil Changed		Client Info		Not Changd	N/A	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	0.7
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	28	7	15
Chromium	ppm	ASTM D5185m	>5	2	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	5	<1	<1
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	3	1	2
Tin	ppm	ASTM D5185m	>5	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
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ADDITIVES		method	iinii/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	7	history1 18	45
	ppm ppm		0			
Boron		ASTM D5185m	0	7	18	45
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	7 0	18 0	45 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	7 0 57	18 0 52	45 0 48
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	7 0 57 <1	18 0 52 <1	45 0 48 <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	7 0 57 <1 901	18 0 52 <1 858	45 0 48 <1 556 1573 785
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	7 0 57 <1 901 1345	18 0 52 <1 858 1269	45 0 48 <1 556 1573
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	7 0 57 <1 901 1345 1003	18 0 52 <1 858 1269 965	45 0 48 <1 556 1573 785
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	7 0 57 <1 901 1345 1003 1286	18 0 52 <1 858 1269 965 1181	45 0 48 <1 556 1573 785 970
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	7 0 57 <1 901 1345 1003 1286 3419	18 0 52 <1 858 1269 965 1181 3560	45 0 48 <1 556 1573 785 970 2940
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	7 0 57 <1 901 1345 1003 1286 3419 current	18 0 52 <1 858 1269 965 1181 3560 history1	45 0 48 <1 556 1573 785 970 2940 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	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 kimit/base	7 0 57 <1 901 1345 1003 1286 3419 current 8	18 0 52 <1 858 1269 965 1181 3560 history1 6	45 0 48 <1 556 1573 785 970 2940 history2 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 kimit/base	7 0 57 <1 901 1345 1003 1286 3419 current 8 6	18 0 52 <1 858 1269 965 1181 3560 history1 6 2	45 0 48 <1 556 1573 785 970 2940 history2 11 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20	7 0 57 <1 901 1345 1003 1286 3419 current 8 6 7	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 2 <1	45 0 48 <1 556 1573 785 970 2940 history2 11 <1 2
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 limit/base >20 limit/base >3	7 0 57 <1 901 1345 1003 1286 3419 current 8 6 7 7	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 <1 kistory1	45 0 48 <1 556 1573 785 970 2940 history2 11 <1 2 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 >20 limit/base >3	7 0 57 <1 901 1345 1003 1286 3419 current 8 6 7 7 current 0.6	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 <1 6 2 <1 history1 0.2	45 0 48 <1 556 1573 785 970 2940 history2 11 2 11 2 history2 0.2
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 >20 limit/base >20	7 0 57 <1 901 1345 1003 1286 3419 <i>current</i> 8 6 7 <i>current</i> 0.6 9.8	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 <1 6 2 <1 history1 0.2 5.5	45 0 48 <1 556 1573 785 970 2940 history2 11 <11 2 history2 0.2 6.3
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 >20 imit/base >3 >20 >30	7 0 57 <1 901 1345 1003 1286 3419 <u>current</u> 8 6 7 7 <u>current</u> 0.6 9.8 21.2	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 <1 6 2 <1 0.2 5.5 19.3	45 0 48 <1 556 1573 785 970 2940 history2 11 <1 2 0.2 6.3 22.0
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 /////////////////////////////////	7 0 57 <1 901 1345 1003 1286 3419 <i>current</i> 8 6 7 <i>current</i> 0.6 9.8 21.2 <i>current</i>	18 0 52 <1 858 1269 965 1181 3560 history1 6 2 <1 6 2 <1 history1 0.2 5.5 19.3 history1	45 0 48 <1 556 1573 785 970 2940 history2 11 <11 2 history2 0.2 6.3 22.0 history2

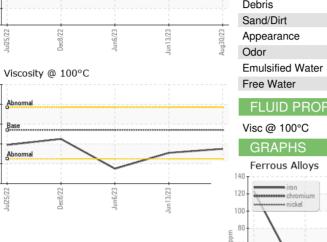


cSt (100°C)

12 10

OIL ANALYSIS REPORT





Odor scalar *Visual NORML NEG No	me	metł	method li	mit/base	current	hist	ory1	history2
Precipitate scalar *Visual NONE NONE NONE NONE NONE Sit scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG NEG NEG Free Water scalar *Visual >0.2 NEG	calar *Visi	lar *Visua	/isual NC	ONE	NONE	NON	E	NONE
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Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG NEG Scalar *Visual NORML Scalar *Visual >0.2 NEG NEG NEG Scalar *Visual NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG NEG Scalar *Visual *0.2 NEG NEG NEG NEG NEG NEG NEG NEG NEG Scalar *Visual *0.2 NEG	calar *Visi	lar *Visua	/isual NC	ONE	NONE	NON	E	NONE
Odor scalar *Visual NORML NEG Non-fer Neg Non-fer Non-fer Sec	calar *Visi	lar *Visua	/isual NC	DNE	NONE	NON	Ε	NONE
Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG FLUID PROPERTIES method limit/base current history1 history Visc @ 100°C cSt ASTM D445 15.4 13.5 13.1 ▲ 11.5 GRAPHS Ferrous Alloys Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C	calar *Visi	lar *Visua	/isual NC	ORML	NORML	NORI	ML	NORML
Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual *0.2 NEG NEG NEG Free Water scalar *Visual *0.2 NEG	calar *Visi	lar *Visua	isual NC	DRML	NORML	NORI	ML	NORML
FLUID PROPERTIES method limit/base current history1 history1 Visc @ 100°C cSt ASTM D445 15.4 13.5 13.1 A 11.5 GRAPHS Ferrous Alloys One-ferrous Metals 0 <	calar *Visi	lar *Visua	/isual >0	.2		NEG		NEG
Visc @ 100°C cSt ASTM D445 15.4 13.5 13.1 11.5 GRAPHS Ferrous Alloys	calar *Visi	lar *Visua	/isual		NEG	NEG		NEG
GRAPHS Ferrous Alloys	TIES me	ES meth	method li	mit/base	current	hist	ory1	history2
Ferrous Alloys	St ASTN	ASTM	STM D445 15	.4	13.5	13.1		11.5
Ferrous Alloys								
Viscosity @ 100°C								
Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C								
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Viscosity @ 100°C Abnormal Abnormal								
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Abnormal								
				as Base				

0.0

Jul25/22

Dec8/22

Aug30/23 -

: 06 Sep 2023

: 07 Sep 2023

Jun13/23

Diagnostician : Wes Davis



GFL Environmental - 419 - Metro Saginaw 6950 N Michigan Saginaw, MI US 48604 Contact: Jeremy Hines jhines@gflenv.com T: (800)684-1277 F:

Jun6/23 -

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)

Dec8/22.

Jun6/23

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Diagnosed

10

Unique Number : 10633941

Laboratory Sample No.

Lab Number

Jul25/22

: GFL0072534

: 05943329

Jun 13/23

Aug30/23