

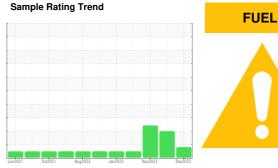
OIL ANALYSIS REPORT



Machine Id 4641M Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)



DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

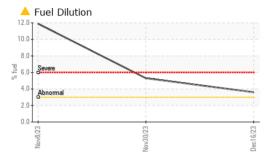
Fluid Condition

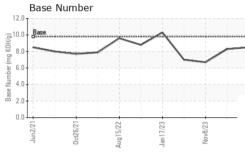
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

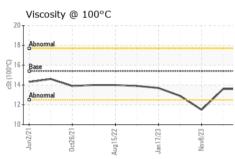
	· · · · · · · · · · · · · · · · · · ·	Jun2021	Oct2021 Aug2022	Jan2023 Nov2023	Dec2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105773	GFL0101487	GFL0101579
Sample Date		Client Info		16 Dec 2023	30 Nov 2023	08 Nov 2023
Machine Age	hrs	Client Info		15207	15085	14928
Oil Age	hrs	Client Info		15085	14928	13201
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				ABNORMAL	ABNORMAL	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	>90	10	21	20
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	4
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	2	2	1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current <1	history1 2	history2 <1
	ppm ppm		0			
Boron		ASTM D5185m	0	<1	2	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	<1 0	2	<1 7
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 53	2 2 54	<1 7 52
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 53	2 2 54 0	<1 7 52
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 53 0 853	2 2 54 0 809	<1 7 52 0 784
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 0 53 0 853 972	2 2 54 0 809 920	<1 7 52 0 784 896
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	<1 0 53 0 853 972 965	2 2 54 0 809 920 901	<1 7 52 0 784 896 882
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	<1 0 53 0 853 972 965 1144	2 54 0 809 920 901 1085	<1 7 52 0 784 896 882 1055
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	<1 0 53 0 853 972 965 1144 3327	2 54 0 809 920 901 1085 3872	<1 7 52 0 784 896 882 1055 2938
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 53 0 853 972 965 1144 3327 current	2 2 54 0 809 920 901 1085 3872 history1	<1 7 52 0 784 896 882 1055 2938 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 53 0 853 972 965 1144 3327 current	2 2 54 0 809 920 901 1085 3872 history1	<1 7 52 0 784 896 882 1055 2938 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 53 0 853 972 965 1144 3327 current 3	2 2 54 0 809 920 901 1085 3872 history1 6	<1 7 52 0 784 896 882 1055 2938 history2 3 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 53 0 853 972 965 1144 3327 current 3 4	2 2 54 0 809 920 901 1085 3872 history1 6 97 4	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	<1 0 53 0 853 972 965 1144 3327 current 3 4 4	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	<1 0 53 0 853 972 965 1144 3327 current 3 4 4 4 3.6 current	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4 \$\text{4}}}}}}} } } } } \right.	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9 11.9 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	<1 0 53 0 853 972 965 1144 3327 current 3 4 4	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4 ▲ 5.3 history1 0.5	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9 11.9 history2 0.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	<1 0 53 0 853 972 965 1144 3327 current 3 4 4 ▲ 3.6 current 0.6 9.3	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4 ▲ 5.3 history1 0.5 10.0	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9 ■ 11.9 history2 0.8 11.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D78185m ASTM D7844 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30 limit/base	<1 0 53 0 853 972 965 1144 3327 current 3 4 4 ▲ 3.6 current 0.6 9.3 19.7 current	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4 ▲ 5.3 history1 0.5 10.0 20.8 history1	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9 11.9 history2 0.8 11.9 22.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30	<1 0 53 0 853 972 965 1144 3327 current 3 4 4 0 0.6 9.3 19.7	2 2 54 0 809 920 901 1085 3872 history1 6 ▲ 97 4 ▲ 5.3 history1 0.5 10.0 20.8	<1 7 52 0 784 896 882 1055 2938 history2 3 5 9 11.9 history2 0.8 11.9 22.0



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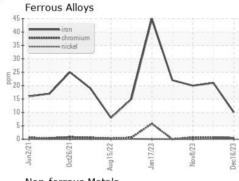


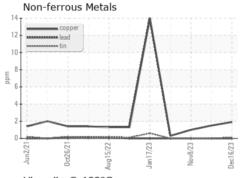


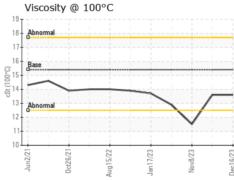
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

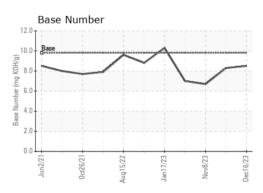
FLUID PROPE	RHES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.6	<u> </u>

GRAPHS













Laboratory Sample No. Lab Number **Unique Number**

: GFL0105773

: 06039086 : 10794315

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 19 Dec 2023 Diagnosed : 22 Dec 2023

Diagnostician : Wes Davis Test Package : FLEET (Additional Tests: PercentFuel)

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.

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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