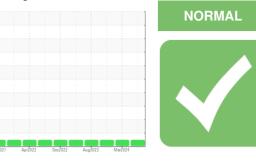


OIL ANALYSIS REPORT

Sample Rating Trend





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

SAMPLE INFORMATION method

Recommendation

Resample at the next service interval to monitor.

Machine Id 4557M

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

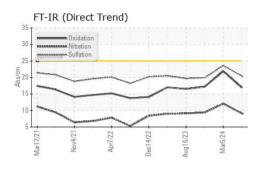
Fluid Condition

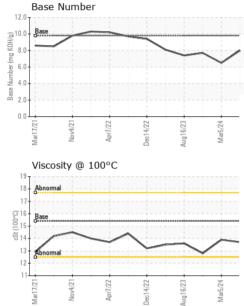
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number		Client Info		GFL0116914	GFL0107800	GFL0096568
Sample Date		Client Info		04 Apr 2024	05 Mar 2024	27 Nov 2023
Machine Age	hrs	Client Info		25713	25597	15069
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
•				NOTIMAL	NOTIMAL	NOTIVIAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
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	31	57	21
Chromium	ppm	ASTM D5185m	>20	2	3	<1
Nickel	ppm	ASTM D5185m	>2	1	<1	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m		4	5	3
		ASTM D5185m	>20	+ <1	0	0
Lead	ppm					
Copper	ppm	ASTM D5185m	>330	2	3	2
Tin	ppm	ASTM D5185m	>15	1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 0	history1 0	history2 2
	ppm ppm		0			
Boron		ASTM D5185m	0	0	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 63	0 0 57	2 0 70
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 63 1	0 0 57 <1	2 0 70 0
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 63 1 1015	0 0 57 <1 1033	2 0 70 0 996
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 0 63 1 1015 1179 1103	0 0 57 <1 1033 1168	2 0 70 0 996 1197
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 63 1 1015 1179	0 0 57 <1 1033 1168 966	2 0 70 0 996 1197 1105
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	0 0 63 1 1015 1179 1103 1330 3301	0 0 57 <1 1033 1168 966 1296 2622	2 0 70 0 996 1197 1105 1340 3314
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	0 0 60 1010 1070 1150 1270 2060	0 0 63 1 1015 1179 1103 1330 3301 current	0 0 57 <1 1033 1168 966 1296 2622 history1	2 0 70 0 996 1197 1105 1340 3314 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	0 0 63 1 1015 1179 1103 1330 3301 current 6	0 0 57 <1 1033 1168 966 1296 2622 history1 13	2 0 70 0 996 1197 1105 1340 3314 history2 3
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 0 63 1 1015 1179 1103 1330 3301 current 6 15	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7	2 0 70 0 996 1197 1105 1340 3314 history2 3 8
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2
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	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 bistory1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 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 >25 >20 limit/base >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current 0.6	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 history1 1.1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 2 history2 0.5
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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current 0.6 9.1	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 history1 1.1 1.1 1.2.1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 2 history2 0.5 9.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current 0.6	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 history1 1.1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 8 2 history2 0.5
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 2060 225 >25 >20 Limit/base >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current 0.6 9.1 20.4	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 history1 1.1 1.1 1.2.1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 2 history2 0.5 9.4
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 2060 225 20 225 20 limit/base >20 limit/base >20 >20	0 0 63 1 1015 1179 1103 1330 3301 current 6 15 2 2 current 0.6 9.1 20.4	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 <u>history1</u> 1.1 1.1 1.2.1 23.6	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 history2 0.5 9.4 19.9
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 TS 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 20 20 20 20 20 20 20 20 2	0 0 63 1 1015 1179 1103 1330 3301 Current 6 15 2 Current 0.6 9.1 20.4 Current	0 0 57 <1 1033 1168 966 1296 2622 history1 13 7 0 history1 1.1 1.1 12.1 23.6 history1	2 0 70 0 996 1197 1105 1340 3314 history2 3 8 2 2 history2 0.5 9.4 19.9 history2



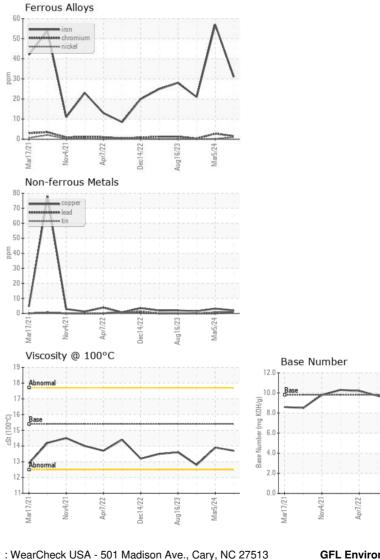
OIL ANALYSIS REPORT





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	13.7	13.9	12.8

GRAPHS



Received

Diagnosed

Tested

: 09 Apr 2024

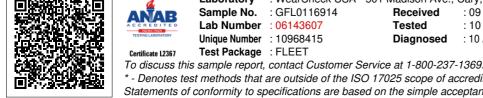
: 10 Apr 2024

: 10 Apr 2024 - Wes Davis

GFL Environmental - 465 - Pontiac 888 Baldwin Pontiac, MI US 48340 Contact: Ricky Matthews rickymathews@gflenv.com T: (586)825-9514 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) E:

Dec14/22

Aug 16/23



Certificate 12367

Laboratory

Sample No.

Lab Number : 06143607

Unique Number : 10968415

Test Package : FLEET

: GFL0116914

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Submitted By: Ricky Matthews

Mar5/24