

OIL ANALYSIS REPORT

Sample Rating Trend NORMAL

Area (C0804129) {UNASSIGNED}

Diesel Engine PETRO CANADA DURON SHP 15W40 (8 GAL)

834023

DIAGNOSIS

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0122175	GFL0118094	GFL0115695
Sample Date		Client Info		24 May 2024	15 May 2024	12 Apr 2024
Machine Age	hrs	Client Info		2146	2106	1902
Oil Age	hrs	Client Info		390	350	146
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
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	17	16	7
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	<1
Lead	ppm	ASTM D5185m	>40	2	0	0
Copper	ppm	ASTM D5185m	>330	4	4	0
Tin	ppm	ASTM D5185m	>15	1	<1	0
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 0	-		history2 7
	ppm ppm		0	current	history1	
Boron		ASTM D5185m	0	current 4	history1 4	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	current 4 0	history1 4 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 67	history1 4 0 67	7 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 4 0 67 1	history1 4 0 67 1	7 0 59 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 4 0 67 1 953	history1 4 0 67 1 900	7 0 59 0 840
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	Current 4 0 67 1 953 1129	history1 4 0 67 1 900 1059	7 0 59 0 840 1010
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	Current 4 0 67 1 953 1129 1010	history1 4 0 67 1 900 1059 1001	7 0 59 0 840 1010 934
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	current 4 0 67 1 953 1129 1010 1266	history1 4 0 67 1 900 1059 1001 1201	7 0 59 0 840 1010 934 1118
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 1010 1070 1150 1270 2060 limit/base	Current 4 0 67 1 953 1129 1010 1266 3268	history1 4 0 67 1 900 1059 1001 1201 3099	7 0 59 0 840 1010 934 1118 3033
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 limit/base	current 4 0 67 1 953 1129 1010 1266 3268 current	history1 4 0 67 1 900 1059 1001 1201 3099 history1	7 0 59 0 840 1010 934 1118 3033 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	current 4 0 67 1 953 1129 1010 1266 3268 current 5	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4	7 0 59 0 840 1010 934 1118 3033 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6	7 0 59 0 840 1010 934 1118 3033 history2 4 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1	7 0 59 0 840 1010 934 1118 3033 history2 4 4 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 6 5 current	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 wistory1	7 0 59 0 840 1010 934 1118 3033 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 0	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 wistory1 0.1	7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm spm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 6 5 0 8.8	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 0.1 7.7	7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0 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 spm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6 >20 >30	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 0 8.8 18.9	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 0.1 7.7 18.4	7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 0 history2 0 6.6 17.6
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 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >6 >20 imit/base >6 >20 30	current 4 0 67 1 953 1129 1010 1266 3268 current 5 6 5 current 0 8.8 18.9 current	history1 4 0 67 1 900 1059 1001 1201 3099 history1 4 6 1 history1 4 6 1 0.1 7.7 18.4 history1	7 0 59 0 840 1010 934 1118 3033 history2 4 4 4 0 history2 0 history2 0 6.6 17.6

Recommendation Resample at the next service interval to monitor.

Wear All component wear rates are normal.

Contamination

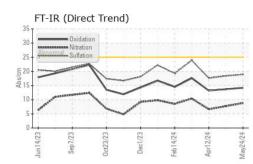
There is no indication of any contamination in the oil.

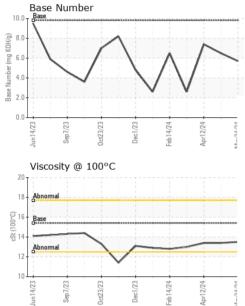
Fluid Condition

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



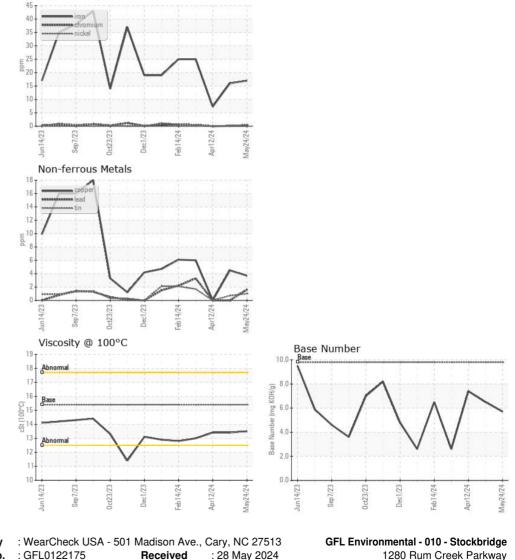
OIL ANALYSIS REPORT





VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	LIGHT	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	13.4	13.4
GRAPHS						

Ferrous Alloys



Laboratory Sample No. : GFL0122175 Received : 28 May 2024 1280 Rum Creek Parkway Lab Number : 06193408 Tested : 30 May 2024 Stockbridge, GA Unique Number : 11050160 Diagnosed : 30 May 2024 - Wes Davis US 30281 Test Package : FLEET Contact: JOSHUA TINKER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. joshuatinker@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: F:

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

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Submitted By: JOSHUA TINKER Page 2 of 2