

OIL ANALYSIS REPORT

Sample Rating Trend





Component

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

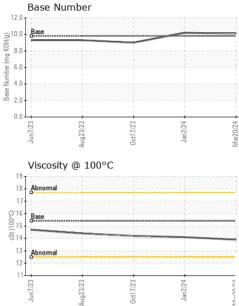
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0110576	GFL0100195	GFL0081213
Sample Date		Client Info		20 Mar 2024	02 Jan 2024	17 Oct 2023
Machine Age	mls	Client Info		155870	155870	154642
Oil Age	mls	Client Info		154642	0	154642
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	13	7	23
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>3	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	3	<1	5
Lead	ppm	ASTM D5185m	>40	1	0	<1
Copper	ppm	ASTM D5185m	>330	2	<1	3
Tin	ppm	ASTM D5185m	>15	1	0	1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 4	history1 2	history2 10
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0	4	2 0 61	10 0 77
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	4 1	2 0	10 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 1 64 1 918	2 0 61 0 1022	10 0 77 1 952
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 1 64 1 918 1097	2 0 61 0 1022 1109	10 0 77 1 952 1058
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	4 1 64 1 918	2 0 61 0 1022 1109 1043	10 0 77 1 952 1058 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 1150 1270	4 1 64 1 918 1097 946 1158	2 0 61 0 1022 1109 1043 1304	10 0 77 1 952 1058 1001 1243
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	4 1 64 1 918 1097 946	2 0 61 0 1022 1109 1043	10 0 77 1 952 1058 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	4 1 64 1 918 1097 946 1158	2 0 61 0 1022 1109 1043 1304	10 0 77 1 952 1058 1001 1243
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 1 64 1 918 1097 946 1158 2965 current 6	2 0 61 0 1022 1109 1043 1304 3323 history1 4	10 0 77 1 952 1058 1001 1243 3179 history2 7
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	4 1 64 1 918 1097 946 1158 2965 current	2 0 61 0 1022 1109 1043 1304 3323 history1	10 0 77 1 952 1058 1001 1243 3179 history2 7 4
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 1 64 1 918 1097 946 1158 2965 current 6	2 0 61 0 1022 1109 1043 1304 3323 history1 4	10 0 77 1 952 1058 1001 1243 3179 history2 7
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 1 64 1 918 1097 946 1158 2965 current 6 0	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3	10 0 77 1 952 1058 1001 1243 3179 history2 7 4
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 0 1010 1070 1150 1270 2060 limit/base >25	4 1 64 1 918 1097 946 1158 2965 <u>current</u> 6 0 2	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 3 <1	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	4 1 64 1 918 1097 946 1158 2965 current 6 0 2 current	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 <1 history1	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3 3
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	4 1 64 1 918 1097 946 1158 2965 current 6 0 2 current 0.3	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 <1 <u>history1</u> 0.2	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3 3 <i>history2</i> 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	4 1 64 1 918 1097 946 1158 2965 current 6 0 2 current 0.3 6.3	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 3 <1 history1 0.2 5.4	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3 3 history2 0.5 6.7
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 320 33 20 20 20	4 1 64 1 918 1097 946 1158 2965 <u>current</u> 6 0 2 <u>current</u> 0.3 6.3 17.1	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 <1 4 3 <1 0.2 5.4 17.4	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3 bistory2 0.5 6.7 18.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	4 1 64 1 918 1097 946 1158 2965 current 6 0 2 current 0.3 6.3 17.1 current	2 0 61 0 1022 1109 1043 1304 3323 history1 4 3 3 <1 history1 0.2 5.4 17.4 history1	10 0 77 1 952 1058 1001 1243 3179 history2 7 4 3 3 history2 0.5 6.7 18.7 history2

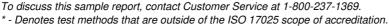


OIL ANALYSIS REPORT

VISUAL



Laboratory Sample No. Lab Number Unique Number Test Package		1 Madison A Received Tested Diagnose	I : 25 : 26	NC 27513 Mar 2024 Mar 2024 Mar 2024 - We		18 C	ronmental - 166 - Phenix City 18 Old Brickyard Rd Phenix City, AL US 36869 Contact: DEAN PEACE JR dean.peace@gflenv.com T:		
	Uiscosity @ 100°C	0ct17/23 0ct17/23	Jan2/24 Jan2/24	12.0- 10.0- (0)HOX Buse Winnber (0)HOX Buse Base Winnber (0) 10.0- 1	Base Number	0ct1723	Jan2/24		
-	Non-ferrous Metal	0et17/23	Jan2/24	Mar20/24 🛱 🖊					
Jan 2/24	Visc @ 100°C GRAPHS Ferrous Alloys		TM D445		13.9	14.1	14.2		
Jan 2/24	Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar *V scalar *V scalar *V scalar *V scalar *V scalar *V scalar *V	isual isual isual isual isual isual isual isual	NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NORML NORML NEG NEG	NONE NONE NONE NORML NORML NEG NEG	NONE NONE NORML NORML NEG NEG history2		
	White Metal Yellow Metal Precipitate	scalar *V	isual isual isual	NONE NONE	NONE NONE NONE	NONE NONE NONE	NONE NONE NONE		



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

Certificate L2367

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