

OIL ANALYSIS REPORT

Sample Rating Trend



427062-402074 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

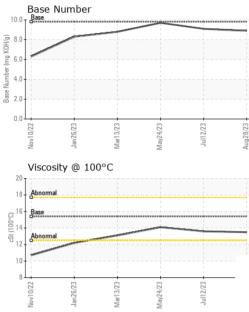
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI		method	limit/base	current	history1	history2	
			innivoase				
Sample Number		Client Info		GFL0090446	GFL0086306	GFL0081517	
Sample Date	bro	Client Info		28 Aug 2023	12 Jul 2023	24 May 2023	
Machine Age	hrs	Client Info	29707		29620	29486 0	
Oil Age	hrs	Client Info		499	0	÷	
Oil Changed		Client Info		N/A	N/A	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	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>120	3	2	1	
Chromium	ppm	ASTM D5185m	>20	0	<1	0	
Nickel	ppm	ASTM D5185m	>5	0	0	0	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m		0	0	0	
Aluminum	ppm	ASTM D5185m	>20	<1	1	1	
Lead	ppm	ASTM D5185m	>40	0	0	0	
Copper	ppm	ASTM D5185m		<1	<1	<1	
Tin	ppm	ASTM D5185m	>15	<1	0	0	
Vanadium	ppm	ASTM D5185m	210	0	0	<1	
Cadmium	ppm	ASTM D5185m		0	0	0	
	ppm				-	-	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	Method ASTM D5185m	0	current 22	history1 32	43	
Boron Barium	ppm ppm		0	22 0	32 <1		
Boron		ASTM D5185m	0	22	32	43	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	22 0	32 <1	43 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	22 0 63	32 <1 64	43 0 67	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	22 0 63 0	32 <1 64 <1	43 0 67 <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	22 0 63 0 981	32 <1 64 <1 943	43 0 67 <1 955	
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	22 0 63 0 981 1159	32 <1 64 <1 943 1152	43 0 67 <1 955 1196	
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	22 0 63 0 981 1159 1042	32 <1 64 <1 943 1152 1072	43 0 67 <1 955 1196 1073	
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	22 0 63 0 981 1159 1042 1257	32 <1 64 <1 943 1152 1072 1283	43 0 67 <1 955 1196 1073 1258	
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 0 1010 1070 1150 1270 2060	22 0 63 0 981 1159 1042 1257 3788	32 <1 64 <1 943 1152 1072 1283 3836	43 0 67 <1 955 1196 1073 1258 3768	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	0 0 60 0 1010 1070 1150 1270 2060	22 0 63 0 981 1159 1042 1257 3788 current	32 <1 64 <1 943 1152 1072 1283 3836 history1	43 0 67 <1 955 1196 1073 1258 3768 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	22 0 63 0 981 1159 1042 1257 3788 current 3	32 <1 64 <1 943 1152 1072 1283 3836 history1 2	43 0 67 <1 955 1196 1073 1258 3768 history2 3	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 1010 1070 1150 1270 2060 kimit/base >25	22 0 63 0 981 1159 1042 1257 3788 current 3 4	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6	
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 >25	22 0 63 0 981 1159 1042 1257 3788 current 3 4 2 2	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 4	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 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 TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	22 0 63 0 981 1159 1042 1257 3788 <u>current</u> 3 4 2 2 <u>current</u> 0.2	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 history1 0.2	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 2 history2 0.1	
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	22 0 63 0 981 1159 1042 1257 3788 current 3 4 2 2 current 0.2 6.1	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 <u>history1</u> 0.2 5.4	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 history2 0.1 4.8	
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 imit/base >4 20 20	22 0 63 0 981 1159 1042 1257 3788 current 3 4 2 current 0.2 6.1 16.5	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 <u>history1</u> 0.2 5.4 17.5	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 <u>history2</u> 0.1 4.8 17.7	
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	22 0 63 0 981 1159 1042 1257 3788 <i>current</i> 3 4 2 <i>current</i> 0.2 6.1 16.5	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 <u>history1</u> 0.2 5.4	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 history2 0.1 4.8 17.7 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	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 imit/base >4 20 20	22 0 63 0 981 1159 1042 1257 3788 current 3 4 2 current 0.2 6.1 16.5	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 <u>history1</u> 0.2 5.4 17.5	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 history2 0.1 4.8 17.7	
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	22 0 63 0 981 1159 1042 1257 3788 <i>current</i> 3 4 2 <i>current</i> 0.2 6.1 16.5	32 <1 64 <1 943 1152 1072 1283 3836 history1 2 5 4 history1 0.2 5.4 17.5 history1	43 0 67 <1 955 1196 1073 1258 3768 history2 3 6 2 history2 0.1 4.8 17.7 history2	



OIL ANALYSIS REPORT

VISUAL



Certificate L2367	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0090446 : <mark>05949845</mark> : 10645804 : FLEET	501 Madison Ave., Cary, NC 27513 Received : 13 Sep 2023 Diagnosed : 15 Sep 2023 Diagnostician : Wes Davis vice at 1-800-237-1369.			Co	GFL Environmental - 868 - Childersburg Fines Hauling (Alpir 13737 Plant R Childersburg, A US 3504 Contact: JONATHAN WILLIAM jonathan.williams@gflenv.coi		
		10 Base 10 Distance in the second se	May24/23	Jul12/23 +	(0)HOX (0,0) HOX (0,0	Nov10/22	Mar13/23	Juit2/23	
		19 18 Abnormal 17			10.0-	Base Number			
		Viscosity @ 100°C		Jul12/23	Aug28/23				
		20- 15- Egg							
		Non-ferrous Meta		Jul12/23	Aug28/23				
		50 30 20 10							
Mar13/23	Jul12/23 -	Perrous Alloys							
		Visc @ 100°C GRAPHS	cSt	ASTM D445	15.4	13.5	13.6	14.1	
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2	
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG	
Mar13/23 May24/23	Jul12/23 Aug28/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
23	Sand/Dirt Appearance	scalar scalar	*Visual *Visual	NONE NORML	NONE NORML	NONE NORML	NONE NORML		
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE		
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE		
		scalar	*Visual						
		White Metal Yellow Metal Precipitate	scalar	*Visual	NONE NONE NONE	NONE NONE NONE	NONE NONE NONE	NONE NONE NONE	

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Submitted By: see also GFL868 - Chelsea Bryan