

OIL ANALYSIS REPORT

Sample Rating Trend





428068-402225.1

Component Diesel Engine

Fluid 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

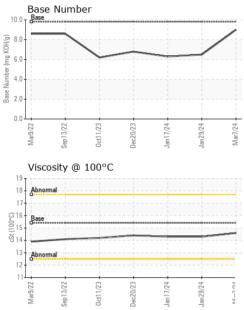
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0109324	GFL0093567	GFL0093538
Sample Date		Client Info		07 Mar 2024	29 Jan 2024	17 Jan 2024
Machine Age	hrs	Client Info		18331	18329	18291
Oil Age	hrs	Client Info		2	597	553
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	ABNORMAL	ATTENTION
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	0.0
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	13	42	38
Chromium	ppm	ASTM D5185m	>20	1	3	3
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		7	1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	4	4
Lead	ppm	ASTM D5185m	>40	0	4	3
Copper	ppm	ASTM D5185m	>330	0	4	4
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185m	limit/base	current 13	history1 5	history2 1
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	13	5	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	13 0	5 0	1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	13 0 54	5 0 75	1 0 71
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	13 0 54 <1	5 0 75 <1	1 0 71 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	13 0 54 <1 886	5 0 75 <1 971	1 0 71 1 944
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	13 0 54 <1 886 1037	5 0 75 <1 971 1152	1 0 71 1 944 1046
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	13 0 54 <1 886 1037 1013	5 0 75 <1 971 1152 918	1 0 71 1 944 1046 1036
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	13 0 54 <1 886 1037 1013 1247	5 0 75 <1 971 1152 918 1281	1 0 71 1 944 1046 1036 1240
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 1010 1070 1150 1270 2060	13 0 54 <1 886 1037 1013 1247 3165	5 0 75 <1 971 1152 918 1281 3106	1 0 71 1 944 1046 1036 1240 2725
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	13 0 54 <1 886 1037 1013 1247 3165 current	5 0 75 <1 971 1152 918 1281 3106 history1	1 0 71 1 944 1046 1036 1240 2725 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 kimit/base >25	13 0 54 <1 886 1037 1013 1247 3165 current 6	5 0 75 <1 971 1152 918 1281 3106 history1 10	1 0 71 1 944 1046 1036 1240 2725 history2 10
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 1010 1070 1150 1270 2060 kimit/base >25	13 0 54 <1 886 1037 1013 1247 3165 current 6 31	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214	1 0 71 1 944 1046 1036 1240 2725 history2 10 197
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 Jimit/base >25	13 0 54 <1 886 1037 1013 1247 3165 current 6 31 30	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 ▲ 65	1 0 71 1 944 1046 1036 1240 2725 history2 10 197 55
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 >20 limit/base >20	13 0 54 <1 886 1037 1013 1247 3165 current 6 31 30 current	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 ▲ 65 history1	1 0 71 1 944 1046 1036 1240 2725 history2 10 197 55 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 2060 225 >25 >20 limit/base >20	13 0 54 <1 886 1037 1013 1247 3165 current 6 31 30 current 0.1	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 ▲ 214 ▲ 65 history1 0.4	1 0 71 1 944 1046 1036 1240 2725 history2 10 197 55 history2 0.4
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	13 0 54 <1 886 1037 1013 1247 3165 current 6 31 30 current 0.1 5.3	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 ▲ 65 history1 0.4 10.4	1 0 71 1 944 1046 1036 1240 2725 history2 10 197 55 history2 0.4 10.2
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 imit/base >25 imit/base >3 >20	13 0 54 <1 886 1037 1013 1247 3165 <u>current</u> 6 31 30 <u>current</u> 0.1 5.3 17.7	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 ▲ 65 history1 0.4 10.4 22.7	1 0 71 1 944 1046 1036 1240 2725 history2 10 197 55 history2 0.4 10.2 22.6
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 ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	13 0 54 <1 886 1037 1013 1247 3165 <i>current</i> 6 31 30 <i>current</i> 0.1 5.3 17.7 <i>current</i>	5 0 75 <1 971 1152 918 1281 3106 history1 10 ▲ 214 €5 history1 0.4 10.4 22.7 history1	1 0 71 1 944 1046 1036 1240 2725 history2 10 ● 197 ● 55 history2 0.4 10.2 22.6 bistory2



OIL ANALYSIS REPORT

VISUAL



Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, * - Denotes test methods that Statements of conformity to se		: WearCheck USA - 50 : GFL0109324 : 06112711 : 10916208 : FLEET contact Customer Serv are outside of the ISO 1	1 Madison Ave., Cary, NC 27513 GFL Received : 08 Mar 2024 Tested : 11 Mar 2024 Diagnosed : 11 Mar 2024 - Wes Davis ice at 1-800-237-1369.				Environmental - 891 - Oklahoma City Hauling 1001 South Rockwell Oklahoma City, OK US 73128 Contact: Andy Smith andrew.smith@gflenv.com T: (405)306-1651		
		17- 17- 16- 15- 14- 13- 12- 11- 12- 11- 12- 12- 12- 12	Dec20/23 -	Jan17/24	(0,HOX BW) 4.0 8382 Minuper (Markov Control of Contro		073 42/1	lan29/24	
		Non-ferrous Metal	Dec20/23	Jan1724 Jan1724 Jan2924 Jan2924	47/Lew 10.0				
Dec20/23	Jan29/24	Visc @ 100°C GRAPHS Ferrous Alloys	cSt	ASTM D445	15.4	14.6	14.3	14.3	
°C	Jani	Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar RTIES	*Visual *Visual *Visual method	NORML >0.2	NORML NEG NEG current	NORML NEG NEG history1	NORML NEG NEG history2	
Dec20/23	+2/9/2/me/	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NONE NORML	NONE NONE NONE LIGHT NONE NORML	NONE NONE NONE NONE NONE NONE NORE	NONE NONE NONE NONE NONE NORE	

limit/base

