

OIL ANALYSIS REPORT

Sample Rating Trend





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.

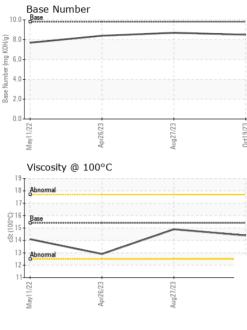
Fluid Condition

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

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SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0097702	GFL0087301	GFL0072903
Sample Date		Client Info		19 Oct 2023	27 Aug 2023	26 Apr 2023
Machine Age	hrs	Client Info		10574	10193	9558
Oil Age	hrs	Client Info		381	466	600
Oil Changed		Client Info		Changed	Changed	Changed
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	>75	34	37	16
Chromium	ppm	ASTM D5185m	>5	2	2	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m		2	<1	2
Lead	ppm	ASTM D5185m	>25	4	5	0
Copper	ppm	ASTM D5185m	>100	2	2	0
Tin	ppm	ASTM D5185m	>4	_ <1	1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current	history1 6	history2 42
	ppm ppm					
Boron		ASTM D5185m	0	1	6	42
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	0 0 60	1 5	6 0	42 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 5 63	6 0 59	42 0 42
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 5 63 <1	6 0 59 1	42 0 42 <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	1 5 63 <1 908	6 0 59 1 945	42 0 42 <1 520
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	1 5 63 <1 908 1107	6 0 59 1 945 1190	42 0 42 <1 520 1461
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	1 5 63 <1 908 1107 1030	6 0 59 1 945 1190 1049	42 0 42 <1 520 1461 694
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	1 5 63 <1 908 1107 1030 1215	6 0 59 1 945 1190 1049 1293	42 0 42 <1 520 1461 694 862
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 2060	1 5 63 <1 908 1107 1030 1215 2731	6 0 59 1 945 1190 1049 1293 3456	42 0 42 <1 520 1461 694 862 2320
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 0 1010 1070 1150 1270 2060	1 5 63 <1 908 1107 1030 1215 2731 current	6 0 59 1 945 1190 1049 1293 3456 history1	42 0 42 <1 520 1461 694 862 2320 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	1 5 63 <1 908 1107 1030 1215 2731 current 4	6 0 59 1 945 1190 1049 1293 3456 history1 6	42 0 42 <1 520 1461 694 862 2320 history2 6
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	1 5 63 <1 908 1107 1030 1215 2731 current 4 4	6 0 59 1 945 1190 1049 1293 3456 history1 6 10	42 0 42 <1 520 1461 694 862 2320 history2 6 4
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	1 5 63 <1 908 1107 1030 1215 2731 current 4 4 2 2	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2
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 2060 225 >25 >20 Limit/base >20	1 5 63 <1 908 1107 1030 1215 2731 current 4 4 2 2 current 2	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2 history1 1.7	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2 2 2 0.6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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 2060 225 >25 >20 Limit/base >20	1 5 63 <1 908 1107 1030 1215 2731 current 4 4 2 2	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2 2 kistory2
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> >20	1 5 63 <1 908 1107 1030 1215 2731 <i>current</i> 4 4 2 <i>current</i> 2 10.8	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2 history1 1.7 1.7	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2 2 0.6 6.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	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 1270 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	1 5 63 <1 908 1107 1030 1215 2731 <i>current</i> 4 4 2 <i>current</i> 2 10.8 22.5 <i>current</i>	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2 history1 1.7 1.2.5 27.3 history1	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2 2 history2 0.6 6.9 20.5 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 ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	1 5 63 <1 908 1107 1030 1215 2731 current 4 4 2 2 current 2 10.8 22.5	6 0 59 1 945 1190 1049 1293 3456 history1 6 10 2 <u>history1</u> 1.7 1.2.5 27.3	42 0 42 <1 520 1461 694 862 2320 history2 6 4 2 2 <u>history2</u> 0.6 6.9 20.5



OIL ANALYSIS REPORT



	VISUAL		method				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	
Aug27/23 0ct19/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Aug	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	14.4	14.9	12.9	
	GRAPHS							
	Ferrous Alloys							
	iron		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
Aug27/23	30 - nickel	/						
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	¹⁹			10.0	Base Number			
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	17-			(B ^{8.0}				
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	May11/22 Apr26/23		Aug27/23	0ct19/23	May11/22	Apr26/23	0ct19/23	
Laboratory Sample No. Lab Number Unique Number	: 06000294	501 Madis Received Diagnose Diagnost	d :07 M ed :07 M	ry, NC 27513 Nov 2023 Nov 2023 s Davis	GFL En	GFL Environmental - 405 - Arbor Hill 7400 Napier R NORTHVILLE, N US 4816 Contact: Brittney Phillip bphillips@gflenv.cor T: (734)714-234		

Submitted By: John Nahal Page 2 of 2