

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **727160** Component **Diesel Engine** Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

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

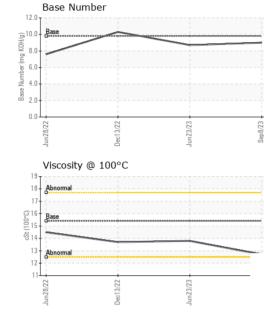
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092911	GFL0055937	GFL0055924
Sample Date		Client Info		08 Sep 2023	23 Jun 2023	13 Dec 2022
Machine Age	hrs	Client Info		5922	5520	5023
Oil Age	hrs	Client Info		0	591	600
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	s	method	limit/base	current	history1	history2
Iron		ASTM D5185m		45	34	27
Chromium	ppm	ASTM D5185m		45 2	2	1
Nickel	ppm	ASTM D5185m	>ɔ >2	2 <1	<1	<1
	ppm	ASTM D5185m	>2	<1	<1	< 1
Titanium	ppm		>3			
Silver	ppm	ASTM D5185m ASTM D5185m		0 6	0 5	<1 5
	ppm			-	5 2	5 0
Lead	ppm	ASTM D5185m	>30	<1 1	3	
Copper	ppm	ASTM D5185m				<1
Tin	ppm	ASTM D5185m	>5	1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		<1	<1	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	Method ASTM D5185m	limit/base	current 10	56	65
	ppm ppm		0			
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	10 0 54	56 <1 11	65 0 12
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60	10 0 54 <1	56 <1 11 <1	65 0 12 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	10 0 54	56 <1 11 <1 690	65 0 12 <1 550
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 54 <1 867 1147	56 <1 11 <1 690 1455	65 0 12 <1 550 1413
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	10 0 54 <1 867	56 <1 11 <1 690	65 0 12 <1 550
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	10 0 54 <1 867 1147	56 <1 11 <1 690 1455	65 0 12 <1 550 1413 696 838
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	10 0 54 <1 867 1147 939	56 <1 11 <1 690 1455 753	65 0 12 <1 550 1413 696
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	10 0 54 <1 867 1147 939 1135	56 <1 11 <1 690 1455 753 909	65 0 12 <1 550 1413 696 838
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	10 0 54 <1 867 1147 939 1135 3412	56 <1 11 <1 690 1455 753 909 3707	65 0 12 <1 550 1413 696 838 3661
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	10 0 54 <1 867 1147 939 1135 3412 current	56 <1 11 <1 690 1455 753 909 3707 history1	65 0 12 <1 550 1413 696 838 3661 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 0 1010 1070 1150 1270 2060 limit/base >20	10 0 54 <1 867 1147 939 1135 3412 current 5	56 <1 11 <1 690 1455 753 909 3707 history1 6	65 0 12 <1 550 1413 696 838 3661 history2 5
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 0 1010 1070 1150 1270 2060 limit/base >20	10 0 54 <1 867 1147 939 1135 3412 <u>current</u> 5 3	56 <1 11 <1 690 1455 753 909 3707 history1 6 5	65 0 12 <1 550 1413 696 838 3661 history2 5 3
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 60 0 1010 1070 1150 1270 2060 limit/base >20	10 0 54 <1 867 1147 939 1135 3412 current 5 3 3 5 current	56 <1 11 <1 690 1455 753 909 3707 history1 6 5 6	65 0 12 <1 550 1413 696 838 3661 history2 5 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3	10 0 54 <1 867 1147 939 1135 3412 current 5 3 3 5 current 1.8	56 <1 11 <90 1455 753 909 3707 history1 6 5 6 5 6 history1 1.8	65 0 12 <1 550 1413 696 838 3661 history2 5 3 6 history2 1.6
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 imit/base >20 imit/base >3	10 0 54 <1 867 1147 939 1135 3412 current 5 3 3 5 current	56 <1 11 <10 690 1455 753 909 3707 history1 6 5 6 5 6 8	65 0 12 <1 550 1413 696 838 3661 history2 5 3 6 kistory2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20	10 0 54 <1 867 1147 939 1135 3412 <i>current</i> 5 3 5 <i>current</i> 1.8 7.4	56 <1 11 <11 690 1455 753 909 3707 history1 6 5 6 5 6 history1 1.8 9.3	65 0 12 <1 550 1413 696 838 3661 history2 5 3 6 history2 1.6 8.6
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	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >30 imit/base	10 0 54 <1 867 1147 939 1135 3412 <i>current</i> 5 3 5 <i>current</i> 1.8 7.4 19.9 <i>current</i>	56 <1 11 <10 690 1455 753 909 3707 history1 6 5 6 5 6 history1 1.8 9.3 21.6 history1	65 0 12 <1 550 1413 696 838 3661 history2 5 3 6 history2 1.6 8.6 22.1 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >30 imit/base	10 0 54 <1 867 1147 939 1135 3412 <u>current</u> 5 3 5 <u>current</u> 1.8 7.4 19.9	56 <1 11 <1 690 1455 753 909 3707 history1 6 5 6 5 6 history1 1.8 9.3 21.6	65 0 12 <1 550 1413 696 838 3661 history2 5 3 6 history2 1.6 8.6 22.1



OIL ANALYSIS REPORT

VISUAL



	VISUAL		methoa	limit/base		nistory i	nistory∠
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
5/23 -	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
Jun 23/23 Sep 8/23	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		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		12.7	13.8	13.7
	GRAPHS	001				1010	
	Ferrous Alloys						
	45 40						
Jun23/23	35nickel						
Ē	30						
	E 25-						
	15						
	5						
	0						
	Jun 28/22 Dec 13/22		Jun23/23	Sep 8/23			
	Jun		Jun	Sel			
	Non-ferrous Metal	s					
	10 copper						
	8 - tin						
	6						
	dd 4						
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	2	ALAN AND A	AND DESCRIPTION OF THE OWNER O	>			
		AND AND ADD	ARRING STREET,	ALL			
	Jun28/22 Dec13/22		Jun23/23	Sep 8/23			
	Junž		Junc	Set			
	Viscosity @ 100°C				Base Number		
	18 - Abnormal			12.0			
	17-				Base		
	G-16- Page						
	G 16 Base 15 14			 			
	5 14			dun dun			
	13 Abnormal			0.8 K0H/0) Base Number 4.0			
	12-			2.0			
	11			0.0			
	13/22		Jun23/23	Sep 8/23	128/2	23/23	
	Dec		Jun	S	Jun	Dec	
Laboratory Sample No. Lab Number Unique Number Test Package		52/82 ^{unr} GFL	GFL Environmental - 641 - Alpe 1241 KING SETTLEMENT ALPENA, US 497 Contact: DYLAN TOL dylan.tolan@gflenv.c				

Submitted By: GFL463 and GFL641 - DYLAN TOLAN