

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 722010

#### Component Diesel Engine

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

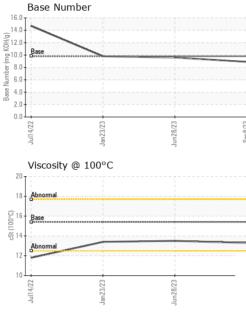
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2					
Sample Number		Client Info		GFL0092914	GFL0015798	GFL0067542					
Sample Date		Client Info		08 Sep 2023	28 Jun 2023	23 Jan 2023					
Machine Age	hrs	Client Info		56	344791	56					
Oil Age	hrs	Client Info		0	344791	0					
Oil Changed		Client Info		N/A	N/A	N/A					
Sample Status				NORMAL	NORMAL	ABNORMAL					
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 METALS method limit/base current history1 history2											
Iron	ppm	ASTM D5185m	>80	10	4	7					
Chromium	ppm	ASTM D5185m		<1	2	<1					
Nickel	ppm	ASTM D5185m	>2	0	1	0					
Titanium	ppm	ASTM D5185m	_	<1	2	0					
Silver	ppm	ASTM D5185m	>3	0	2	0					
Aluminum	ppm	ASTM D5185m		<1	2	2					
Lead	ppm	ASTM D5185m	>30	<1	4	3					
Copper	ppm	ASTM D5185m		10	10	10					
Tin	ppm	ASTM D5185m	>5	<1	2	<1					
Vanadium	ppm	ASTM D5185m	>5	<1	1	0					
Cadmium		ASTM D5185m		<1 <1	2	0					
Caumum	ppm	ASTIVI DSTOSIII		51	2	0					
ADDITIVES		method	limit/base	current	history1	history2					
Boron	ppm	ASTM D5185m	0	14	17	84					
Boron Barium	ppm ppm		0	14 0	17 0	84 0					
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	14 0 58	17 0 52	84 0 13					
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0	14 0 58 <1	17 0 52 2	84 0 13 <1					
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	14 0 58	17 0 52 2 887	84 0 13 <1 612					
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	14 0 58 <1	17 0 52 2	84 0 13 <1 612 1336					
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	14 0 58 <1 918	17 0 52 2 887	84 0 13 <1 612					
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	14 0 58 <1 918 1176	17 0 52 2 887 1114	84 0 13 <1 612 1336					
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	14 0 58 <1 918 1176 995	17 0 52 2 887 1114 943	84 0 13 <1 612 1336 653					
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	14 0 58 <1 918 1176 995 1201	17 0 52 2 887 1114 943 1162	84 0 13 <1 612 1336 653 825					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	14 0 58 <1 918 1176 995 1201 3648	17 0 52 2 887 1114 943 1162 3616	84 0 13 <1 612 1336 653 825 3496					
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	14 0 58 <1 918 1176 995 1201 3648 current	17 0 52 2 887 1114 943 1162 3616 history1	84 0 13 <1 612 1336 653 825 3496 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	14 0 58 <1 918 1176 995 1201 3648 current 4	17 0 52 2 887 1114 943 1162 3616 history1 5	84 0 13 <1 612 1336 653 825 3496 history2 3					
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >20	14 0 58 <1 918 1176 995 1201 3648 <u>current</u> 4 3	17 0 52 2 887 1114 943 1162 3616 history1 5 4	84 0 13 <1 612 1336 653 825 3496 history2 3 ▲ 62					
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 <b>limit/base</b> >20	14 0 58 <1 918 1176 995 1201 3648 <u>current</u> 4 3 4	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6	84 0 13 <1 612 1336 653 825 3496 history2 3 62 2					
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 2060 200 200 200 200 200 200	14 0 58 <1 918 1176 995 1201 3648 <u>current</u> 4 3 4 <u>current</u>	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6 kistory1	84 0 13 <1 612 1336 653 825 3496 history2 3 62 2 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 2060 200 200 200 200 200 200	14 0 58 <1 918 1176 995 1201 3648 <i>current</i> 4 3 4 <i>current</i> 0.4	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6 history1 0.2	84 0 13 <1 612 1336 653 825 3496 history2 3 62 2 2 history2 0.3					
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 <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i> >20	14 0 58 <1 918 1176 995 1201 3648 <u>current</u> 4 3 4 <u>current</u> 0.4 5.9	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6 history1 0.2 5.1	84 0 13 <1 612 1336 653 825 3496 history2 3 62 2 history2 0.3 7.6					
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 <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >20 <b>imit/base</b> >3 >20 >3	14 0 58 <1 918 1176 995 1201 3648 <u>current</u> 4 3 4 4 <u>current</u> 0.4 5.9 17.5	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6 <b>history1</b> 0.2 5.1 17.7	84 0 13 <1 612 1336 653 825 3496 bistory2 3 62 2 bistory2 0.3 7.6 19.1					
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2060 2060 200 200 200 200 200 20 3 20 20 3 3 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	14 0 58 <1 918 1176 995 1201 3648 <i>current</i> 4 3 4 <i>current</i> 0.4 5.9 17.5 <i>current</i>	17 0 52 2 887 1114 943 1162 3616 history1 5 4 6 history1 0.2 5.1 17.7 history1	84 0 13 <1 612 1336 653 825 3496 history2 3 ▲ 62 2 history2 0.3 7.6 19.1					



# **OIL ANALYSIS REPORT**

VISUAL



	Laboratory Sample No. Lab Number Unique Number	: GFL0092914 : <mark>05952008</mark>	Received Diagnose	501 Madison Ave., Cary, NC 27513 Received : 14 Sep 2023 Diagnosed : 18 Sep 2023 Diagnostician : Wes Davis tice at 1-800-237-1369. 7025 scope of accreditation.			GFL Environmental - 641 - Alpen 1241 KING SETTLEMENT RI ALPENA, M US 4970 Contact: DYLAN TOLAI dylan.tolan@gflenv.cor T: (989)854-720		
		Base 0-0-01 12 12 12 12 12 12 12 12 12 1		Jun28/23	(1) HOV HOV HOV HOV HOV HOV HOV HOV	Base Control 14/22 C2/2 C2	Jun28/23	2 0 0 0 0	
		Viscosity @ 100°	°C	Jun28/23	16.0- 14.0-	Base Number			
		unda 80 60 40 20 0 57 57 57		9/23	Sep8/23				
		Non-ferrous Met	als						
		10 5 0 22/F flub 22/2 flub		Jun28/23 -	Sep8/23				
دیں موجب ا	- 	25 20 E 15							
		Visc @ 100°C GRAPHS Ferrous Alloys	cSt	ASTM D445	15.4	13.3	13.5	13.4	
		FLUID PROP		method	limit/base	current	history1	history2	
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG	
CC 00	Sep8/23	Appearance Odor	scalar scalar	*Visual *Visual	NORML NORML	NORML	NORML	NORML NORML	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
		Silt Debris	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE	NONE NONE	
		Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE	NONE NONE	
							NONE		

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Submitted By: GFL463 and GFL641 - DYLAN TOLAN