

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend

Apr/2023 May/2023 Jul/2



# Machine Id 911031

#### 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

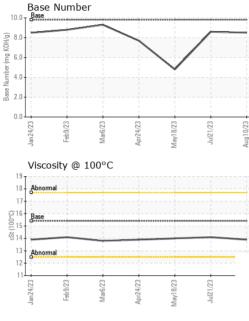
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088175	GFL0088162	GFL0067660
Sample Date		Client Info		10 Aug 2023	21 Jul 2023	18 May 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
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	ppm	ASTM D5185m	>80	3	2	10
Chromium	ppm	ASTM D5185m	>5	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>30	0	<1	0
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	<1	<1	0
Tin	ppm	ASTM D5185m	>5	0	0	0
Vanadium	ppm	ASTM D5185m	20	<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
	pp		11 1. 0	-	-	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	0 0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 57	0 0 52	2 0 60
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 57 <1	0 0 52 <1	2 0 60 <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	0 0 57 <1 934	0 0 52 <1 892	2 0 60 <1 958
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 57 <1 934 1047	0 0 52 <1 892 1001	2 0 60 <1 958 1084
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 57 <1 934	0 0 52 <1 892	2 0 60 <1 958
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	0 0 57 <1 934 1047	0 0 52 <1 892 1001	2 0 60 <1 958 1084 1046 1297
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	0 0 57 <1 934 1047 957	0 0 52 <1 892 1001 943	2 0 60 <1 958 1084 1046
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	0 0 57 <1 934 1047 957 1189	0 0 52 <1 892 1001 943 1175	2 0 60 <1 958 1084 1046 1297
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	0 0 57 <1 934 1047 957 1189 3428	0 0 52 <1 892 1001 943 1175 3375	2 0 60 <1 958 1084 1046 1297 3594
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	0 0 57 <1 934 1047 957 1189 3428 current	0 0 52 <1 892 1001 943 1175 3375 history1	2 0 60 <1 958 1084 1046 1297 3594 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	0 0 57 <1 934 1047 957 1189 3428 <u>current</u> 2	0 0 52 <1 892 1001 943 1175 3375 history1 2	2 0 60 <1 958 1084 1046 1297 3594 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	0 0 60 0 1010 1070 1150 1270 2060 kimit/base >20	0 0 57 <1 934 1047 957 1189 3428 current 2 3 3 <1	0 0 52 <1 892 1001 943 1175 3375 history1 2 3	2 0 60 <1 958 1084 1046 1297 3594 <b>history2</b> 3 4
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	0 0 57 <1 934 1047 957 1189 3428 current 2 3 3 <1	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2	2 0 60 <1 958 1084 1046 1297 3594 history2 3 4 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >20 <b>limit/base</b>	0 0 57 <1 934 1047 957 1189 3428 <u>current</u> 2 3 <1 <u>current</u>	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2 3 2 history1	2 0 60 <1 958 1084 1046 1297 3594 history2 3 4 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 ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20 limit/base >20	0 0 57 <1 934 1047 957 1189 3428 <u>current</u> 2 3 <1 <u>current</u> 0.4	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2 3 2 history1 0.2	2 0 60 <1 958 1084 1046 1297 3594 history2 3 4 2 <u>history2</u> 0.9
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> >20 <i>limit/base</i> >3 >20	0 0 57 <1 934 1047 957 1189 3428 <u>current</u> 2 3 428 <u>current</u> 0.4 5.7	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2 3 2 history1 0.2 5.0	2 0 60 <1 958 1084 1046 1297 3594 history2 3 3 4 2 history2 0.9 12.4
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 200 200 200 320 320 33 200 230	0 0 57 <1 934 1047 957 1189 3428 <u>current</u> 2 3 <1 2 3 <1 <u>current</u> 0.4 5.7 17.5	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2 3 2 history1 0.2 5.0 16.7	2 0 60 <1 958 1084 1046 1297 3594 history2 3 3 4 2 0.9 12.4 30.5
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 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	0 0 57 <1 934 1047 957 1189 3428 <i>current</i> 2 3 428 <i>current</i> 0.4 5.7 17.5 <i>current</i>	0 0 52 <1 892 1001 943 1175 3375 history1 2 3 2 3 2 history1 0.2 5.0 16.7 history1	2 0 60 <1 958 1084 1046 1297 3594 history2 3 4 2 history2 0.9 12.4 30.5 history2



# **OIL ANALYSIS REPORT**

VISUAL



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		/			Metal		scalar		NON		NONE		NONE		NONE	
				Precip	itate		scalar		NON		NONE		NONE		NONE	
				Silt			scalar		NON		NONE		NONE		NONE	
				Debris			scalar		NON		NONE		NONE		NONE	
1 7				Sand/I			scalar		NON		NONE		NONE		NONE	
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°C					ified Wa	ter	scalar		>0.2		NEG		NEG		NEG	
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* - De	notes tes	st method	ls that ar	e outsid	e of the	ISO 1	7025 sc	ope of ac	creditation.				-		7)310-2	2802
Stater	nents of a	conformity	to specif	tications	are base	d on t	he simple	e acceptar	nce decisior	n rule (J	CGM 106:2	2012)				F:

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Contact/Location: James Jarrett - GFL820