

# **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 827037-1041

## Component Diesel Engine

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.

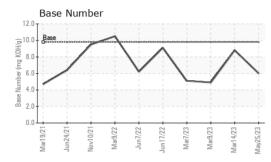
## Fluid Condition

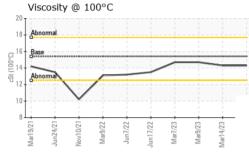
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0083937	GFL0071399	GFL0071438
Sample Date		Client Info		25 May 2023	14 Mar 2023	09 Mar 2023
Machine Age	hrs	Client Info		6265	6134	6133
Oil Age	hrs	Client Info		585	1	485
Oil Changed		Client Info		Changed	Not Changd	Changed
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	>0	<1.0 NEG	NEG	NEG
-				NEG		
WEAR METAL	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>80	43	17	🔺 113
Chromium	ppm	ASTM D5185m	>5	1	<1	4
Nickel	ppm	ASTM D5185m	>2	0	0	1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	1	1	5
Lead	ppm	ASTM D5185m	>30	2	0	4
Copper	ppm	ASTM D5185m	>150	2	<1	5
Tin	ppm	ASTM D5185m	>5	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES		methou				
Boron	ppm	ASTM D5185m	0	6	9	5
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	6	9	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	6 0	9 0	5 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 64	9 0 54	5 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 64 <1	9 0 54 <1	5 0 64 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	6 0 64 <1 902	9 0 54 <1 857	5 0 64 1 885
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	6 0 64 <1 902 1126	9 0 54 <1 857 1035	5 0 64 1 885 1140
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	6 0 64 <1 902 1126 1010	9 0 54 <1 857 1035 897	5 0 64 1 885 1140 996
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	6 0 64 <1 902 1126 1010 1244	9 0 54 <1 857 1035 897 1131	5 0 64 1 885 1140 996 1217
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	6 0 64 <1 902 1126 1010 1244 3113	9 0 54 <1 857 1035 897 1131 3092	5 0 64 1 885 1140 996 1217 2423
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	6 0 64 <1 902 1126 1010 1244 3113 current	9 0 54 <1 857 1035 897 1131 3092 history1	5 0 64 1 885 1140 996 1217 2423 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	6 0 64 <1 902 1126 1010 1244 3113 current 3	9 0 54 <1 857 1035 897 1131 3092 history1 6	5 0 64 1 885 1140 996 1217 2423 history2 8
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 >20	6 0 64 <1 902 1126 1010 1244 3113 current 3 7	9 0 54 <1 857 1035 897 1131 3092 history1 6 3	5 0 64 1 885 1140 996 1217 2423 history2 8 11
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 <b>limit/base</b> >20	6 0 64 <1 902 1126 1010 1244 3113 current 3 7 2	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 3 <1	5 0 64 1 885 1140 996 1217 2423 history2 8 11 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >20	6 0 64 <1 902 1126 1010 1244 3113 <i>current</i> 3 7 2 <i>current</i> 0.9	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 <1 6 3 <1 history1 0.3	5 0 64 1 885 1140 996 1217 2423 history2 8 11 2 2 8 11 2 1.4
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 limit/base >20 limit/base >20	6 0 64 <1 902 1126 1010 1244 3113 current 3 7 2 2	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 <1	5 0 64 1 885 1140 996 1217 2423 history2 8 11 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> >20 <i>limit/base</i> >3 >20	6 0 64 <1 902 1126 1010 1244 3113 <i>current</i> 3 7 2 <i>current</i> 0.9 13.3	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 <1 6 3 <1 history1 0.3 7.1	5 0 64 1 885 1140 996 1217 2423 history2 8 11 2 history2 1.4 1.4 19.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	6 0 64 <1 902 1126 1010 1244 3113 <i>current</i> 3 7 2 <i>current</i> 0.9 13.3 24.8 <i>current</i>	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 <1 6 3 <1 0.3 7.1 19.2 history1	5 0 64 1 885 1140 996 1217 2423 history2 8 11 2 8 11 2 history2 1.4 19.3 31.7 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 <b>imit/base</b> >20 <b>imit/base</b> >3 >20 >3	6 0 64 <1 902 1126 1010 1244 3113 <i>current</i> 3 7 2 <i>current</i> 0.9 13.3 24.8	9 0 54 <1 857 1035 897 1131 3092 history1 6 3 <1 6 3 <1 0.3 7.1 19.2	5 0 64 1 885 1140 996 1217 2423 history2 8 11 2 2 8 11 2 <b>history2</b> 1.4 19.3 31.7



# **OIL ANALYSIS REPORT**





VISUAL		method	limit/base	current	history1	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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	14.3	14.3	14.7
GRAPHS						

Ferrous Alloys 140 120 100 80 ppm 60 40 20 n Jun17/22 Mar7/23 Mav25/23 Mar9/22 Mar19/21 Vov10/21 Jun7/22 Mar9/23 /ar14/23 Non-ferrous Metals 10 lead ppm 2 Mar19/21 Aav25/23 Mar9/22 un17/22 Mar7/23 Aar14/73 Viscosity @ 100°C Base Number 19 12.0 18 17 10. Base Number (mg KOH/g) 16 Ba 8.0 () 15 001 6.0 *ଟ*୍ଧ 1: Ab 4.0 2 ( 10 0.0 9 May25/23 -Jun17/22 Mar7/23 Jun24/21 Mar9/22 Jun7/22 Jun17/22 Mar7/23 May25/23 Mar19/21 Jun24/21 Nov10/21 Mar9/23 Mar14/23 Mar19/21 Vov10/21 Mar9/23 Mar14/23 Mar9/77 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 622 - Traverse City Hauling Laboratory Sample No. : GFL0083937 Received : 30 May 2023 160 Hughes Dr Lab Number : 05859092 Diagnosed : 31 May 2023 Traverse City, MI Unique Number : 10493557 Diagnostician : Wes Davis US 49686 Test Package : FLEET Contact: GARY BREWER

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To discuss this sample report, contact Customer Service at 1-800-237-1369.
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\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Page 2 of 2

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F: