

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## NORMAL

# 420025-402469

#### Component Diesel Engine

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

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

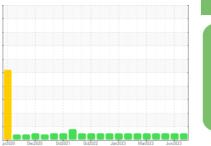
All component wear rates are normal.

#### 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 INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092037	GFL0084696	GFL0078125
Sample Date		Client Info		07 Nov 2023	12 Jun 2023	04 May 2023
Machine Age	hrs	Client Info		34376	9894	195287
Oil Age	hrs	Client Info		600	0	0
Oil Changed		Client Info		Changed	Not Changd	Not Changd
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		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	6	14	9
Chromium	ppm	ASTM D5185m	>4	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	<1	5	1
Lead	ppm	ASTM D5185m	>45	0	1	0
Copper	ppm	ASTM D5185m	>85	0	1	1
Tin	ppm	ASTM D5185m	>4	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		ام م مالح میں	limit/base		biotoput	history2
ADDITIVES		method	IIIIII/Dase	current	history1	TIIStOT y2
Boron	ppm		0	0	<1	2
	ppm ppm		0			
Boron		ASTM D5185m	0	0	<1	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	<1 0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 62	<1 0 63	2 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 62 0	<1 0 63 <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 62 0 1050	<1 0 63 <1 1049	2 0 60 <1 1016
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 62 0 1050 1209	<1 0 63 <1 1049 1172	2 0 60 <1 1016 1083
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 ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 62 0 1050 1209 1121	<1 0 63 <1 1049 1172 1085	2 0 60 <1 1016 1083 1024
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 62 0 1050 1209 1121 1426	<1 0 63 <1 1049 1172 1085 1396	2 0 60 <1 1016 1083 1024 1305
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	0 0 62 0 1050 1209 1121 1426 3223	<1 0 63 <1 1049 1172 1085 1396 3655	2 0 60 <1 1016 1083 1024 1305 3613
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	0 0 62 0 1050 1209 1121 1426 3223 current	<1 0 63 <1 1049 1172 1085 1396 3655 history1	2 0 60 <1 1016 1083 1024 1305 3613 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 <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	0 0 62 0 1050 1209 1121 1426 3223 current 4	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6	2 0 60 <1 1016 1083 1024 1305 3613 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >30	0 0 62 0 1050 1209 1121 1426 3223 current 4 5	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	0 0 62 0 1050 1209 1121 1426 3223 current 4 5 1	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30 -20	0 0 62 0 1050 1209 1121 1426 3223 current 4 5 1 1	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11 history1	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 limit/base >20	0 0 62 0 1050 1209 1121 1426 3223 <u>current</u> 4 5 1 1 <u>current</u> 0.3	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11 6 13 11 0.5	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2 5 7 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 200 <i>limit/base</i> >3 >20	0 0 62 0 1050 1209 1121 1426 3223 <i>current</i> 4 5 1 <i>current</i> 0.3 8.0	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11 6 13 11 0.5 9.2	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2 5 7 2 history2 0.3 7.3
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> >30 <b>imit/base</b> >3 20	0 0 62 0 1050 1209 1121 1426 3223 current 4 5 1 1 current 0.3 8.0 19.9	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11 6 13 11 0.5 9.2 21.3	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2 5 7 2 2 history2 0.3 7.3 17.7
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 D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 2060 2060 200 200	0 0 62 0 1050 1209 1121 1426 3223 <i>current</i> 4 5 1 <i>current</i> 0.3 8.0 19.9	<1 0 63 <1 1049 1172 1085 1396 3655 history1 6 13 11 6 13 11 0.5 9.2 21.3 history1	2 0 60 <1 1016 1083 1024 1305 3613 history2 5 7 2 5 7 2 2 history2 0.3 7.3 17.7 history2



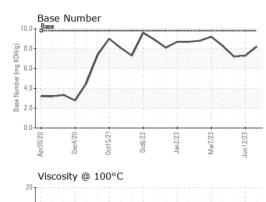
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# **OIL ANALYSIS REPORT**



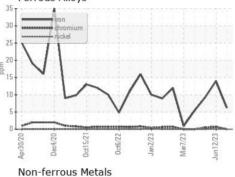
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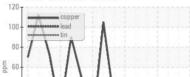
Jan 2/23

Mar7/73

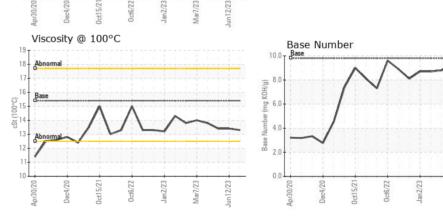
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	13.3	13.4	13.4
GRAPHS						

Ferrous Alloys





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

Submitted By: Apolinar Zacarias Page 2 of 2

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