

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

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.

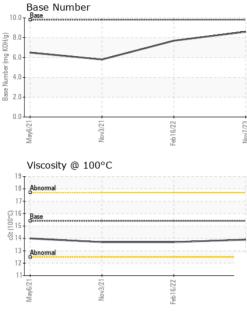
Fluid Condition

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		GFL0093137	GFL0042384	GFL0036151
Sample Date		Client Info		07 Nov 2023	16 Feb 2022	03 Nov 2021
Machine Age	hrs	Client Info		15545	13778	12508
Oil Age	hrs	Client Info		13778	12508	12508
Oil Changed		Client Info		Changed	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	ppm	ASTM D5185m	>100	20	41	55
Chromium	ppm	ASTM D5185m		<1	1	2
Nickel Titanium	ppm	ASTM D5185m	>4	0	0	<1 0
Silver	ppm	ASTM D5185m ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m		3	7	10
Lead	ppm	ASTM D5185m	>20	<1	0	<1
	ppm	ASTM D5185m		<1	<1	<1
Copper Tin	ppm		>15	0	<1	<1
Antimony	ppm ppm	ASTM D5185m	>10		0	0
Vanadium		ASTM D5185m		0	0	0
Cadmium	ppm ppm	ASTM D5185m		0	0	0
ouumum						
			Paral II.			history O
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	2	history1 3	6
Boron Barium		ASTM D5185m ASTM D5185m	0	2 0	history1 3 0	6 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 58	history1 3 0 51	6 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 58 <1	history1 3 0 51 <1	6 0 56 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 58 <1 918	history1 3 0 51 <1 867	6 0 56 <1 904
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	2 0 58 <1 918 1019	history1 3 0 51 <1 867 1042	6 0 56 <1 904 1037
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	2 0 58 <1 918 1019 990	history1 3 0 51 <1 867 1042 922	6 0 56 <1 904 1037 978
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	2 0 58 <1 918 1019 990 1207	history1 3 0 51 <1 867 1042 922 1092	6 0 56 <1 904 1037 978 1156
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	0 0 60 0 1010 1070 1150	2 0 58 <1 918 1019 990	history1 3 0 51 <1 867 1042 922	6 0 56 <1 904 1037 978
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	2 0 58 <1 918 1019 990 1207	history1 3 0 51 <1 867 1042 922 1092	6 0 56 <1 904 1037 978 1156
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	2 0 58 <1 918 1019 990 1207 2913	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5	6 0 56 <1 904 1037 978 1156 2391
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	2 0 58 <1 918 1019 990 1207 2913 current	history1 3 0 51 <1 867 1042 922 1092 2308 history1	6 0 56 <1 904 1037 978 1156 2391 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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 limit/base	2 0 58 <1 918 1019 990 1207 2913 current 4	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5	6 0 56 <1 904 1037 978 1156 2391 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm 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 limit/base	2 0 58 <1 918 1019 990 1207 2913 current 4 4	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4	6 0 56 <1 904 1037 978 1156 2391 history2 4 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 0 58 <1 918 1019 990 1207 2913 current 4 4 3	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10
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 2060 225 >25	2 0 58 <1 918 1019 990 1207 2913 current 4 3 3	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6 history1	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10 10 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 >25 >20 limit/base >3	2 0 58 <1 918 1019 990 1207 2913 <u>current</u> 4 4 3 <u>current</u> 0.7	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6 history1 1.1	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10 history2 1.6
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 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	2 0 58 <1 918 1019 990 1207 2913 <i>current</i> 4 4 3 <i>current</i> 0.7 9.2	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6 history1 1.1 13.5	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10 history2 1.6 1.6 14.8
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 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 58 <1 918 1019 990 1207 2913 Current 4 4 3 Current 0.7 9.2 19.9	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6 history1 1.1 13.5 25.6 history1	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10 history2 1.6 14.8 27 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 D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 58 <1 918 1019 990 1207 2913 current 4 4 3 current 0.7 9.2 19.9	history1 3 0 51 <1 867 1042 922 1092 2308 history1 5 4 6 history1 1.1 13.5 25.6	6 0 56 <1 904 1037 978 1156 2391 history2 4 6 10 history2 1.6 14.8 27



OIL ANALYSIS REPORT



	VISUAL		method				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		*Visual	NONE	NONE	NONE	NONE
		scalar					
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Nov7/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Z	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP			limit/base	current	history1	history2
*******	Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.7	13.7
	GRAPHS						
	Ferrous Alloys						
_	50- iron						
	nickel						
	40						
	톨 30 -						
	20						
	20						
	10						
	0	***************************************					
	May6/21		Feb16/22	Nov7/23			
	Nor		Feb1	Nov			
	Non-ferrous Me	tals					
	¹⁰						
	copper lead						
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	4 2 0 2007012550000127600000000000000000000000000000000	And a state of the					
	4 2 0 2007012550000127600000000000000000000000000000000		16/22	v7/23			
	4 0 1779/ew		Feb16/22	Nov7/23			
	4 2 0 2007012550000127600000000000000000000000000000000		Feb 16/22		Base Number	r	
	Viscosity @ 100		Feb16/22		Base Number	r	
	Viscosity @ 100		Feb16/22	10.	Base	r	
	Viscosity @ 1000		Feb16/22	10.	0 - Base	r	
	Viscosity @ 1000		Feb16/22	10.	0 - Base	r	
	Viscosity @ 1000		Feb 16.022	10.	0 - Base	r	
	Viscosity @ 100		Feb 16/22	10.	0 - Base	r	
	Viscosity @ 1000		Feb 16/22	10. (8.) (0)HOX 0 (6.) (6.) 10 9	0	r	
	Viscosity @ 1000		Feb 16/22	10. 8. 9. 00 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	0 - Base	r	
	Viscosity @ 100 Base Abnormal Abnormal			10. (b) HOX (b) HOX (b) HOX (b) HOX (b) (b) HOX (b) (b) HOX (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	0		2
	Viscosity @ 1000			10. 8. 9. 00 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	0 - Base		Feb16.22
ory No. nber umber	Viscosity @ 100 Viscosity @ 100	№C	son Ave., Ca d : 09 ed : 10	10. (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)		Izrooo Invironmental - 41 Ste	5 - Michigan Ea 6200 Elmrido rling Heights, I US 483
ory No. nber umber kage	Viscosity @ 100 Viscosity @ 100	- 501 Madi Receive Diagnos Diagnos	son Ave., Ca d : 09 ed : 10 tician : We	10.1 (0)HOJ Bull 4.1 (0)HOJ BULL 4.1		Izeroon Invironmental - 41 Ste Conta	5 - Michigan Ea 6200 Elmrid rling Heights,

Report Id: GFL415 [WUSCAR] 06003410 (Generated: 11/12/2023 08:51:58) Rev: 1

To discuss this sample

* - 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

Submitted By: Frank Wolak Page 2 of 2

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