

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 813110 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

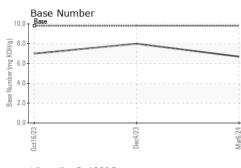
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

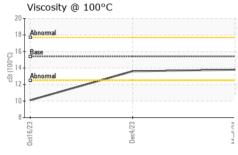
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104570	GFL0092602	GFL0092629
Sample Date		Client Info		06 Mar 2024	04 Dec 2023	16 Oct 2023
Machine Age	hrs	Client Info		1464	881	598
Oil Age	hrs	Client Info		593	291	598
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.4
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	16	15	43
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	4	6	13
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	2
Aluminum	ppm	ASTM D5185m	>20	<1	2	5
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	3	10	54
Tin	ppm	ASTM D5185m	>15	0	<1	3
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	current	history1 11	history2 168
	ppm ppm					
Boron		ASTM D5185m	0	1	11	168
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	1 0	11 0	168 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 59	11 0 69	168 0 118
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 59 <1	11 0 69 0	168 0 118 5
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 59 <1 959	11 0 69 0 978	168 0 118 5 686
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 59 <1 959 1063	11 0 69 0 978 1107	168 0 118 5 686 1391
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	1 0 59 <1 959 1063 956	11 0 69 0 978 1107 993	168 0 118 5 686 1391 712
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	1 0 59 <1 959 1063 956 1159	11 0 69 0 978 1107 993 1254	168 0 118 5 686 1391 712 897
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	1 0 59 <1 959 1063 956 1159 3136	11 0 69 0 978 1107 993 1254 2870	168 0 118 5 686 1391 712 897 2279
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 1010 1070 1150 1270 2060	1 0 59 <1 959 1063 956 1159 3136 current	11 0 69 0 978 1107 993 1254 2870 history1	168 0 118 5 686 1391 712 897 2279 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 method	0 0 60 1010 1070 1150 1270 2060	1 0 59 <1 959 1063 956 1159 3136 current 4	11 0 69 0 978 1107 993 1254 2870 history1 10	168 0 118 5 686 1391 712 897 2279 history2 ▲ 71
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	1 0 59 <1 959 1063 956 1159 3136 current 4 6 24	11 0 69 0 978 1107 993 1254 2870 history1 10 4	168 0 118 5 686 1391 712 897 2279 kistory2 ∧ 71 3
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 limit/base >25	1 0 59 <1 959 1063 956 1159 3136 current 4 6 24	11 0 69 0 978 1107 993 1254 2870 history1 10 4 2	168 0 118 5 686 1391 712 897 2279 history2 ▲ 71 3 13
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	1 0 59 <1 959 1063 956 1159 3136 current 4 6 24 24 current	11 0 69 0 978 1107 993 1254 2870 history1 10 4 2 2 history1	168 0 118 5 686 1391 712 897 2279 bistory2 ∧ 71 3 13 13
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	1 0 59 <1 959 1063 956 1159 3136 <u>current</u> 4 6 24 <u>current</u> 0.6	11 0 69 0 978 1107 993 1254 2870 history1 10 4 2 2 history1 0.5	168 0 118 5 686 1391 712 897 2279 history2 ∧ 71 3 13 13 history2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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> >25 >20 <i>limit/base</i> >4 >20	1 0 59 <1 959 1063 956 1159 3136 <i>current</i> 4 6 24 <i>current</i> 0.6 9.2	11 0 69 0 978 1107 993 1254 2870 history1 10 4 2 2 history1 0.5 7.2	168 0 118 5 686 1391 712 897 2279 history2 ▲ 71 3 13 13 history2 0.7 10.4
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 255 25 20 imit/base >20 imit/base >20 30	1 0 59 <1 959 1063 956 1159 3136 <u>current</u> 4 6 24 <u>current</u> 0.6 9.2 19.9	11 0 69 0 978 1107 993 1254 2870 history1 10 4 2 2 history1 0.5 7.2 19.4	 168 0 118 5 686 1391 712 897 2279 history2 history2 0.7 10.4 24.8



OIL ANALYSIS REPORT

VISUAL





		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
Dec4/23 -	Mar6/24 ·	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Dec	Mar	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Wate		*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PRO	DPERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.6	0.1
		GRAPHS						
		Ferrous Alloy	5					
/23	F C.	40 - iron	 					
Dec4/23	h.hC	35 - nickel						
		30						
		E ²⁵ 20						
		15						
		10-						
		5	The Contraction of the Owner of the Owner of Contraction of Contra	Mirana and American States and American States				
		0	~		4-			
		0ct16/23	Dec4/23		Mar6/24			
		Oct	De		N.			
		Non-ferrous I	Metals					
		60 copper						
		50 - lead						
		40						
		틆 30						
		20-						
		10						
		0	53		24			
		33.0	1					
		ct16/23	lect		llar6/2			
		Oct16/23	Dec4/23		Mar6/24			
		Viscosity @ 1			₩ 10.0·	Base Number		
		Viscosity @ 1			10.0	Base Number		
		Viscosity @ 1			10.0	Base Number		
		Viscosity @ 1 Abnormal			10.0	Base Number		
		Viscosity @ 1 Abnormal			10.0	Base Number		
		Viscosity @ 1			10.0	Base Number		
		Viscosity @ 1			(0)HOX BUD (0)HOX BUD	Base Number		
		Viscosity @ 1			10.0	Base Number		
		Viscosity @ 1	00°C		10.0 (a) 8.0 (b) HOX BW 4.0 (b) 100 MW 400 (c) 100 WW 400 (c) 100W	Base		
		Viscosity @ 1	00°C		10.0 (a) 8.0 (b) HOX BW 4.0 (b) 100 MW 400 (c) 100 WW 400 (c) 100W	Base	c4/23	
		Viscosity @ 1			10.0 (BHO) BU 4.0 	Base Number	Dec423	
4	Laboratory	Viscosity @ 1	00°C		10.0 (BHO) BU 4.0 (BHO) BU 4.0 (BHO) BU 4.0 (BHO) BU 4.0 (BHO) BU 4.0 (Compared on the second on the	Det 1913	ronmental - 947 -	
NAB	Sample No.	Viscosity @ 1	oo°C	ved : 11	10.0 (BHO) BU 10 (BHO) BU 10 (Det 1913	ronmental - 947 -	6 County Rd
	Sample No. Lab Number	Viscosity @ 1	- 501 Madison Recei Tester	ved : 11 d : 12	10.0 (BHO) BU 40 (BHO) BU 40 (BHO) BU 40 (BHO) BU 40 (BHO) BU 40 (Comparison of the second se	GFL Envir	ronmental - 947 -	6 County Rd Horicon, N
	Sample No.	Viscosity @ 1	oo°C	ved : 11 d : 12	10.0 (BHO) BU 10 (BHO) BU 10 (GFL Envir	ronmental - 947 - N729	6 County Rd

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

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