

OIL ANALYSIS REPORT

Sample Rating Trend



222046-630251

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

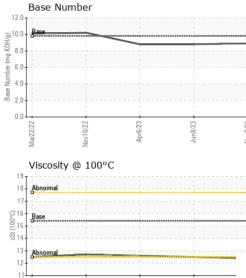
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093413	GFL0080398	GFL0066742
Sample Date		Client Info		02 Nov 2023	08 Jun 2023	06 Apr 2023
Machine Age	hrs	Client Info		8403	8109	8058
Oil Age	hrs	Client Info		600	600	0
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	ATTENTION	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>2.0	<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	42	23	20
Chromium	ppm	ASTM D5185m	>20	1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	<1	0
Lead	ppm	ASTM D5185m	>40	<1	4	3
Copper	ppm	ASTM D5185m	>330	<1	2	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 10	history1 13	history2 15
	ppm ppm					
Boron		ASTM D5185m	0	10	13	15
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	10 0	13 2	15 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	10 0 64	13 2 71	15 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 64 <1	13 2 71 <1	15 0 62 <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	10 0 64 <1 1016	13 2 71 <1 912	15 0 62 <1 862
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	10 0 64 <1 1016 1115	13 2 71 <1 912 1102	15 0 62 <1 862 1029
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 1010 1070 1150	10 0 64 <1 1016 1115 1107	13 2 71 <1 912 1102 1056	15 0 62 <1 862 1029 976
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	10 0 64 <1 1016 1115 1107 1368	13 2 71 <1 912 1102 1056 1237	15 0 62 <1 862 1029 976 1135
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	10 0 64 <1 1016 1115 1107 1368 3371	13 2 71 <1 912 1102 1056 1237 3565	15 0 62 <1 862 1029 976 1135 2703
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 0 1010 1070 1150 1270 2060	10 0 64 <1 1016 1115 1107 1368 3371 current	13 2 71 <1 912 1102 1056 1237 3565 history1	15 0 62 <1 862 1029 976 1135 2703 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 0 1010 1070 1150 1270 2060	10 0 64 <1 1016 1115 1107 1368 3371 current 5	13 2 71 <1 912 1102 1056 1237 3565 history1 4	15 0 62 <1 862 1029 976 1135 2703 history2 5
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	10 0 64 <1 1016 1115 1107 1368 3371 current 5 24	13 2 71 <1 912 1102 1056 1237 3565 history1 4 ▲ 84	15 0 62 <1 862 1029 976 1135 2703 history2 5 72
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 >20	10 0 64 <1 1016 1115 1107 1368 3371 current 5 24 <1	13 2 71 <1 912 1102 1056 1237 3565 history1 4 ▲ 84 2	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 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 2060 225 >25 >20 Limit/base >20	10 0 64 <1 1016 1115 1107 1368 3371 current 5 24 <1 current	13 2 71 <1 912 1102 1056 1237 3565 history1 4 ▲ 84 2 history1	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	10 0 64 <1 1016 1115 1107 1368 3371 <i>current</i> 5 24 <1 <i>current</i> 0.3	13 2 71 <1 912 1102 1056 1237 3565 history1 4 ▲ 84 2 history1 0.2	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 2 2 history2 0.2
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 imit/base >25 >20 imit/base >3 >20	10 0 64 <1 1016 1115 1107 1368 3371 current 5 24 <1 current 0.3 5.6	13 2 71 <1 912 1026 1237 3565 history1 4 ▲ 84 2 history1 0.2 5.8	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 2 5 72 2 history2 0.2 5.2
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 20 225 20 imit/base >3 >20 >30	10 0 64 <1 1016 1115 1107 1368 3371 current 5 24 <1 current 0.3 5.6 18.3	13 2 71 <1 912 102 1056 1237 3565 history1 4 ▲ 84 2 history1 0.2 5.8 18.5	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 2 history2 0.2 5.2 16.1
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 2060 2060 225 20 220 220 1imit/base >3 >20 >30 30	10 0 64 <1 1016 1115 1107 1368 3371 Current 5 24 <1 Current 0.3 5.6 18.3 Current	13 2 71 <1 912 1056 1237 3565 history1 4 ▲ 84 2 history1 0.2 5.8 18.5 history1	15 0 62 <1 862 1029 976 1135 2703 history2 5 72 2 5 72 2 history2 0.2 5.2 16.1 history2



Mar22/22

OIL ANALYSIS REPORT



Apr6/23

10/22

	VISUAL		method	limit/base	current	history1	histo	ory∠
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
_	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	Ξ
Nov2/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NOR	ЛL
INDA	Odor	scalar	*Visual	NORML	NORML	NORML	NOR	ЛL
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
	FLUID PROP	PERTIES	method	limit/base	current	history1	histo	ory2
-	Visc @ 100°C	cSt	ASTM D445	15.4	12.4	12.5	12.6	
	GRAPHS							
	Ferrous Alloys							
	40 iron			1				
	35 - nickel							
	30							
	25 20							
,	15							
	10							
	5-		1					
	0			asad8888				
	Mar22/22 Nov10/22	Apr6/23	Jun8/23	Nov2/23				
	Mar2 Nov1	Ap	Jur	Nov				
	Non-ferrous Me	etals						
	10 T							
	copper							
	essesses tin		1					
	6							
		- THE OWNER ADDRESS	annun b					
	2	LANNING MARKED AND AND AND AND AND AND AND AND AND AN						
	1		13	53				
	5 5	21	2	2.9				
		Apr6/23	nn8,	lov2/				
	Mar22/22 Nov10/22 -	Apr6/23	Jun8/23	Nov2/23				
	Viscosity @ 100		Jung		Base Number			
	Viscosity @ 100		0°unr	12.0	Base Number			
	202222000 Wiscosity @ 100		gung	12.0	Base Number			
	Viscosity @ 100		Jun8	12.0	Base Number			
1000	Viscosity @ 100		BmJ	12.0	Base Number			
	Viscosity @ 100		gunf	12.0	Base Number			
	Viscosity @ 100		8mL	12.0	Base Number			
	Viscosity @ 100		8mL	12.0 (0)HOX HOX B B B B B C HOX B B B B B C HOX B C C HOX B C C HOX B C C C C C C C C C C C C C C C C C C	Base Number			
	Viscosity @ 100		gunf	12.0	Base Number			
NUMUU 67 TAT	Viscosity @ 100	D°C		12.0- 10	Baca			
to and the second	Viscosity @ 100	D°C		12.0- 10	Baca			
NAMONA NA	Viscosity @ 100		Brul	12.0 10.0 (D) 2.0	Base Number	Apr6/23	Jun 8/23	
	Viscosity @ 100	D°C	Jun8/23+	12.0 (0,0) (Mar2/2/2	Apr6/23		lau
,	Viscosity @ 100	D°C	EZEquip	12.0 (0,0) (Mar2/2/2	ECUGURY rironmental - 893		
y b. er	Viscosity @ 100 Viscosity @ 100 Abnormal	Ezyge Ezyge V - 501 Madis Received Diagnose	on Ave., Ca : 06 : cd : 07	12.0 10.0	Mar2/2/2	ECUGURY rironmental - 893	- OK East H 2100 Lilly Seminol	Sti le,
o. er ber	Viscosity @ 100 Viscosity @ 100	Ezgady Ezgady A - 501 Madis Received	on Ave., Ca : 06 : cd : 07	12.0 10.0	Mar2/2/2	EZggod rironmental - 893	- OK East H 2100 Lilly Seminol US 7	Sti le, 74
o. er ber ige	Viscosity @ 100 Viscosity @ 100 Abnormal	EZZYGU EZZYGU A - 501 Madis Received Diagnose Diagnosti	on Ave., Ca : 06 : 07 ician : We	12.0 10.0	Mar2/2/2	rironmental - 893	- OK East H 2100 Lilly Seminol	Sti le, 74 Bar

VISUAL method limit/base current historv1 historv2

Test Pa Certificate L2367 To discuss this sample r * - 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)

F:

Contact/Location: Roger Barlow - GFL893