

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 413058

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 INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0085471	GFL0075309	GFL0065830
Sample Date		Client Info		10 Jul 2023	01 Apr 2023	27 Jan 2023
Machine Age	mls	Client Info		53854	38262	27540
Oil Age	mls	Client Info		53854	0	0
Oil Changed		Client Info		Changed	N/A	N/A
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	6	10	7
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	4	1
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	8	2
Tin	ppm	ASTM D5185m	>15	0	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	current 0	history1 0	history2 0
	ppm ppm					
Boron		ASTM D5185m	0	0	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 44	0 0 46	0 0 46
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 44 <1	0 0 46 <1	0 0 46 <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 44 <1 0	0 0 46 <1 18	0 0 46 <1 17
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 44 <1 0 2506	0 0 46 <1 18 3066	0 0 46 <1 17 2794
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	0 0 44 <1 0 2506 1096	0 0 46 <1 18 3066 1153	0 0 46 <1 17 2794 1128
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 44 <1 0 2506 1096 1250	0 0 46 <1 18 3066 1153 1433	0 0 46 <1 17 2794 1128 1319
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 1010 1070 1150 1270 2060	0 0 44 <1 0 2506 1096 1250 3544	0 0 46 <1 18 3066 1153 1433 3788	0 0 46 <1 17 2794 1128 1319 3395
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	0 0 44 <1 0 2506 1096 1250 3544 current	0 0 46 <1 18 3066 1153 1433 3788 history1	0 0 46 <1 17 2794 1128 1319 3395 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	0 0 44 <1 0 2506 1096 1250 3544 <i>current</i> 10	0 0 46 <1 18 3066 1153 1433 3788 history1 8	0 0 46 <1 17 2794 1128 1319 3395 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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 0 44 <1 0 2506 1096 1250 3544 <u>current</u> 10 0	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0
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	0 0 44 <1 0 2506 1096 1250 3544 current 10 0 7	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 >25	0 0 44 <1 0 2506 1096 1250 3544 <i>current</i> 10 0 7	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12 history1	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9 9
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	0 0 44 <1 0 2506 1096 1250 3544 <i>current</i> 10 0 7 <i>current</i> 0.1	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12 history1 0.2	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9 <u>history2</u> 0.1
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> >25 >20 <i>limit/base</i> >3 >20	0 0 44 <1 0 2506 1096 1250 3544 <i>current</i> 10 0 7 <i>current</i> 0.1 6.8	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12 history1 0.2 8.0	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9 history2 0.1 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 imit/base >25 imit/base >3 >20	0 0 44 <1 0 2506 1096 1250 3544 current 10 0 7 current 0.1 6.8 17.0	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12 history1 0.2 8.0 18.7	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9 <u>history2</u> 0.1 7.3 16.5
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 44 <1 0 2506 1096 1250 3544 current 10 0 7 current 0.1 6.8 17.0 current	0 0 46 <1 18 3066 1153 1433 3788 history1 8 0 12 history1 0.2 8.0 18.7 history1	0 0 46 <1 17 2794 1128 1319 3395 history2 8 0 9 history2 0.1 7.3 16.5 history2



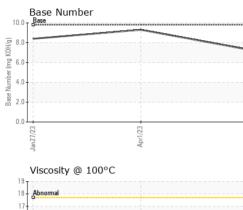
() 16 () 15 14 Base

> 13 Abnormal 12 11

Jan27/23

OIL ANALYSIS REPORT

VISUAL



	VISUAL		method	iimii/base	current	nistory i	riistory2
	White Metal	scalar '	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal		*Visual	NONE	NONE	NONE	NONE
April / 23 	Precipitate		*Visual	NONE	NONE	NONE	NONE
	Silt	scalar '	*Visual	NONE	NONE	NONE	NONE
	Debris		*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt		*Visual	NONE	NONE	NONE	NONE
	Appearance		*Visual	NORML	NORML	NORML	NORML
Apr	Odor	scalar '	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water		*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar '	*Visual		NEG	NEG	NEG
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt /	ASTM D445	15.4	13.7	14.1	14.8
	GRAPHS						
	Ferrous Alloys						
	10 iron	\frown					
Apr1/23	8 - mickel						
	6 -						
	шdd						
	4						
	2						
	0	23		23			
	lan 27/23	Apr1/23		Jul10/23			
	⊸ Non-ferrous Meta			,			
	¹⁰ T						
	copper						
	8 - tin	$\langle \ \rangle$					
	6						
	udd						
	E 4						
	4 2						
	2						
				123			
	2	Apr1/23		Juli 10/23			
	4 2 0 5 7 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1	Apr1/23		Juitorza			
		Apr1/23		E2001Inr	Base Number		
	Viscosity @ 100°	Apr1/23					
	Viscosity @ 100°	Apr1/23		10.0-			
	Viscosity @ 100°	Apr1/23		10.0-			
	Viscosity @ 100°	Apr1/23		10.0-			
	Viscosity @ 100°	Apr1/23		10.0-			
	Viscosity @ 100° Viscosity @ 100° Base 17 4 4 2 0 Viscosity @ 100°	Apr1/23		0.0، ۴۵.۵ ۲۵.۵ (۵) ۲۵.۵ (۵) ۲۵.۵ (۵) ۲۵.۵ (۵)			
	Viscosity @ 100°	Apr1/23		10.0 (0)HOX BW bw back and the second second by back and the second by back and the second by the se			
	Viscosity @ 100° ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰	C Horliza		10.0- (b) HOX W But Bage Bage 2.0- 0.00	Base	23	
	Viscosity @ 100° ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰	C Horliza		10.0- (b) HOX W But Bage Bage 2.0- 0.00	Base	April23	
	Viscosity @ 100° Viscosity @ 100° Base 17 4 4 2 0 Viscosity @ 100°	Apr1/23		10.0 (0)HOX BW bw back and the second second by back and the second by back and the second by the se		Apri/23	
Laboratory	Viscosity @ 100° Viscosity @ 100° Abnormal	Apri/23 - Apri/23		10.0- (0)HOX BW 300 MU	Dase	ronmental - 983 - S	Sugar Land Hauli
Sample No.	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal Control of the second sec	C EZUNAR EZUNAR 501 Madisc Received	:17、	10.0 (0)HOX BUL 300 100 100 100 100 100 100 100 100 100	Dase	ronmental - 983 - S 16011 We	Sugar Land Hauli st Belfort Stre
Sample No. Lab Numbe	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal CELE Solution Soluti	C EZUINA EZUINA EZUINA SO1 Madisc Received Diagnosed	:17. d :19.	10.0- (0)Hoy Buy Sector 10.0- (0)Hoy Buy Sector 10.0-	Dase	ronmental - 983 - S 16011 We	Sugar Land Haul i st Belfort Stre Sugar Land, T
Sample No. Lab Numbe Unique Numb	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal Construction Base Second Construction Base Second Construction Base Second Construction Cons	C EZUNAR EZUNAR 501 Madisc Received	:17. d :19.	10.0 (0)HOX BUL 300 100 100 100 100 100 100 100 100 100	Dase	ronmental - 983 - S 16011 We	Sugar Land Hauli st Belfort Stre Sugar Land, 1 US 7749
Sample No. Lab Numbe	Viscosity @ 100° Viscosity @ 100° Abnomal	C EZUNAY 501 Madisc Received Diagnosec Diagnostic	:17. d :19. cian :Jon	10.0 (0)HOX but) (0)HOX but)	Dase	ronmental - 983 - S 16011 We : Conta	Sugar Land Hauli st Belfort Stre Sugar Land, 1

20

Submitted By: TECHNICIAN ACCOUNT