

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 920080-205317

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

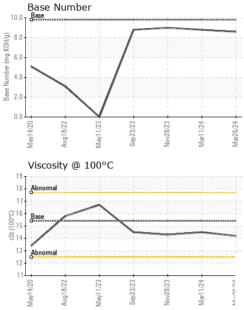
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI		mothed	limit/boge	ourroat	biotom	history
			limit/base	current	history1	history2
Sample Number		Client Info		GFL0114409	GFL0114454	GFL0100461
Sample Date		Client Info		26 Mar 2024	11 Mar 2024	28 Nov 2023
Machine Age	mls	Client Info		152419	150697	145306
Oil Age	mls	Client Info		152419	150697	145306
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	12	10
Chromium	ppm		>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	27	0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	3	2
Lead	ppm	ASTM D5185m		0	0	0
Copper	ppm	ASTM D5185m		2	<1	<1
Tin	ppm		>15	0	<1	0
Vanadium	ppm	ASTM D5185m	210	0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES	ppm	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	0 2	0 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 60	0 2 63	0 2 55
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 60 0	0 2 63 0	0 2 55 0
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 60 0 1026	0 2 63 0 947	0 2 55 0 853
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 60 0 1026 1167	0 2 63 0 947 1130	0 2 55 0 853 1017
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 60 0 1026 1167 1095	0 2 63 0 947 1130 934	0 2 55 0 853 1017 897
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 60 0 1026 1167 1095 1287	0 2 63 0 947 1130 934 1232	0 2 55 0 853 1017 897 1119
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	0 0 60 0 1026 1167 1095 1287 3729	0 2 63 0 947 1130 934 1232 3208	0 2 55 0 853 1017 897 1119 4506
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 1010 1070 1150 1270 2060	0 0 60 0 1026 1167 1095 1287 3729 current	0 2 63 0 947 1130 934 1232 3208 history1	0 2 55 0 853 1017 897 1119 4506 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 0 1010 1070 1150 1270 2060	0 0 60 0 1026 1167 1095 1287 3729 current 3	0 2 63 0 947 1130 934 1232 3208 history1 4	0 2 55 0 853 1017 897 1119 4506 history2 3
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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3	0 2 63 0 947 1130 934 1232 3208 history1 4 1	0 2 55 0 853 1017 897 1119 4506 history2 3 2
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 0 1010 1070 1150 1270 2060 limit/base >25 >20	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5
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 2060 225 >25	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8 8	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 5 history1	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 8 current 1	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 <u>history1</u> 0.8	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7
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 TS 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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8 current 1 8.5	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 history1 0.8 7.7	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7 7.6
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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 8 current 1	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 <u>history1</u> 0.8	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7
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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8 current 1 8.5	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 history1 0.8 7.7	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7 7.6
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 20 320 33 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8 current 1 8.5 19.7	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 <u>history1</u> 0.8 7.7 19.2	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7 7.6 19.7
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	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	0 0 60 0 1026 1167 1095 1287 3729 current 3 3 3 8 current 1 8.5 19.7 current	0 2 63 0 947 1130 934 1232 3208 history1 4 1 5 history1 0.8 7.7 19.2 history1	0 2 55 0 853 1017 897 1119 4506 history2 3 2 5 5 history2 0.7 7.6 19.7 history2



OIL ANALYSIS REPORT

VISUAL



/		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
23 -	24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep 23/23 Nov 28/23	Mar11/24 Mar26/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
0 2	~ ~	Emulsified Water						
2			scalar	*Visual	>0.2	NEG	NEG	NEG
1 1		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE			limit/base	current	history1	history2
<u> </u>		Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.5	14.3
		GRAPHS Ferrous Alloys						
		¹⁴⁰						
3/23	1/24	120 - iron iron						
Sep 23/23 Nov 28/23	Mar11/24	100 - nickel						
		80						
		Ed 60						
		40	1					
		20-						
		53 55 50	23	23 24	24			
		May14/20 Aug18/22 May11/23	Sep23/23	Nov28/23 Mar11/24	Mar26/24			
				NG NG	M			
		Non-ferrous Meta	IS					
		copper						
		8 - Reservesses tin						
		u dd						
		ā 4						
		2						
		2						
		0	3223	8/23	6/24			
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sep23/23	Nov28/23 Mar11/24	Mar26/24			
		May14/20 Aug18/22 May11/23		Nov28/23 Mart 1/24	Mar26/24	Dage Number		
		0		Nov28/23 Mart 1/24	47292 marga	Base Number		
		02741/keW Viscosity @ 100°		Nov28/23				
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov28/23	10.0	Base		
		0 02/iFi/MEW Viscosity @ 100°0 18 Abnormal		Nov28/23	10.0	Base		
		0 02/iFi/MEW Viscosity @ 100°0 18 Abnormal		Nov28/23	10.0	Base		
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov28/23	10.0	Base		
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov28/23	0.0 8.0 0.6 (Ch(HO) 0.6 (.0 988 989 989 989 989 989 989 989 989 98	Base	/	
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov28/23	0.01 0.8 0.0 KOH(0) 0.0 per	Base		
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			10.0 (0)HOX Buy January 888 2.0 0.0	Base		
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			10.0 (0)HOX Buy January 888 2.0 0.0	Base	3/23	
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Nov28/23 Nov28/23 Mart 1/24 Mart 1/24	10.0 (0,0) (Base	May 11/2.3 Sep 23/2.3 Min/28/23	Mar11/28 24
		Uiscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10	Sep23/23	Nov28/23 6	10.0 8.0 0.0 0.0 10.0 0.0 10.0 0.0 0.0 0.0 0.0	Base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
4	Laboratory	Uiscosity @ 100° 10 10 10 10 10 10 10 10 10 10	C EZEZ EZEZ Class D1 Madisc	ton Ave., Cary	10.0 (6)HOX bu) Jaquin 4.0 4.0 4.0 4.0 4.0 0.0 5, NC 27513	GFL Envir	onmental - 865 - E	ast Mount Hauling
ANAB	Sample No.	Viscosity @ 100° ¹⁹ ¹⁰	C EZEZ EZEZ Case 01 Madisco Rece	eczazowy wom Ave., Cary ived : 01	10.0 (0)HOO 6.0 (0)HOO	GFL Envir		ast Mount Hauling t Houston Road
	Sample No. Lab Numbe	Viscosity @ 100°	C EXECUTE STREET D1 Madisc Rece Teste	economic and the second	10.0 (0)(HO) Bull 10(0) (0)(HO) 10(0)(HO) Bull 10(0) (0)(HO) Bull 10(0)(HO) Bull	GFL Envir 72	onmental - 865 - E	ast Mount Hauling t Houston Road Houston, דא
	Sample No. Lab Number Unique Number	Viscosity @ 100°	C EXECUTE STREET D1 Madisc Rece Teste	52/82/00 F7/11/14W F	10.0 (0)HOO 6.0 (0)HOO	GFL Envir 72	onmental - 865 - E 213 East Mount	ast Mount Hauling t Houston Road Houston, דא US 77050
Certificate L2367	Sample No. Lab Numbe Unique Numbe Test Package	Viscosity @ 100°	D1 Madisc Rece Teste Diagr	error Ave., Cary ived : 01 ed : 02 nosed : 02	10.0 ()(HO) Bull Jaquing 4.0 ()(HO) Bull Jaq	GFL Envir 72	onmental - 865 - E 213 East Mount Contad	ast Mount Hauling t Houston Road Houston, T≻

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Submitted By: TECHNICIAN ACCOUNT