

OIL ANALYSIS REPORT

Sample Rating Trend





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.

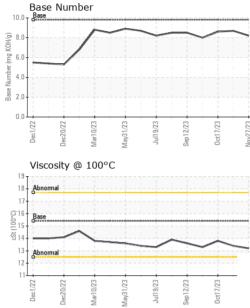
thod		limit/b	ase	С	urren	t	ł	nistory
Jec2022	Dec2022	Mar2023	May2023	Jul2023	Sep2023	0ct2023	Nov202:	

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103478	GFL0064606	GFL0094801
Sample Date		Client Info		27 Nov 2023	07 Nov 2023	17 Oct 2023
Machine Age	hrs	Client Info		12701	12570	12417
Oil Age	hrs	Client Info		962	831	678
Oil Changed		Client Info		Not Changd	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
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method	7 0.1	NEG	NEG	NEG
WEAR METAL	\$	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	6	3	4
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>25	1	2	2
Lead	ppm	ASTM D5185m	>45	0	<1	0
Copper	ppm	ASTM D5185m		<1	<1	<1
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 4	history2 2
	ppm ppm		0			
Boron		ASTM D5185m	0	2	4	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 2	4	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 2 63	4 0 57	2 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 2 63 0	4 0 57 <1	2 0 60 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	2 2 63 0 891	4 0 57 <1 903	2 0 60 0 904
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 2 63 0 891 1032	4 0 57 <1 903 968	2 0 60 0 904 993
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	0 0 60 0 1010 1070 1150	2 2 63 0 891 1032 944	4 0 57 <1 903 968 996	2 0 60 0 904 993 1012
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 2 63 0 891 1032 944 1151	4 0 57 <1 903 968 996 1179	2 0 60 0 904 993 1012 1178
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	2 2 63 0 891 1032 944 1151 3047	4 0 57 <1 903 968 996 1179 2933	2 0 60 904 993 1012 1178 3594
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	2 2 63 0 891 1032 944 1151 3047 current	4 0 57 <1 903 968 996 1179 2933 history1	2 0 60 0 904 993 1012 1178 3594 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	2 2 63 0 891 1032 944 1151 3047 current 4	4 0 57 <1 903 968 996 1179 2933 history1 3	2 0 60 904 993 1012 1178 3594 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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >30	2 2 63 0 891 1032 944 1151 3047 <u>current</u> 4 2	4 0 57 <1 903 968 996 1179 2933 history1 3 4	2 0 60 904 993 1012 1178 3594 history2 3 4
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 >30	2 2 63 0 891 1032 944 1151 3047 current 4 2 3	4 0 57 <1 903 968 996 1179 2933 history1 3 4 2	2 0 60 0 904 993 1012 1178 3594 history2 3 4 4
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 ->20 limit/base	2 2 63 0 891 1032 944 1151 3047 current 4 2 3 3	4 0 57 <1 903 968 996 1179 2933 history1 3 4 2 2 history1	2 0 60 904 993 1012 1178 3594 history2 3 4 4 4
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >30	2 2 63 0 891 1032 944 1151 3047 <i>current</i> 4 2 3 <i>current</i> 0.2	4 0 57 <1 903 968 996 1179 2933 history1 3 4 2 2 history1 0.2	2 0 60 904 993 1012 1178 3594 history2 3 4 4 4 history2 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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >20	2 2 63 0 891 1032 944 1151 3047 <i>current</i> 4 2 3 <i>current</i> 0.2 6.9	4 0 57 <1 903 968 996 1179 2933 history1 3 4 2 2 history1 0.2 6.4	2 0 60 0 904 993 1012 1178 3594 history2 3 4 4 4 4 history2 0.1 5.6
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >20 imit/base >3 >20	2 2 63 0 891 1032 944 1151 3047 <u>current</u> 4 2 3 <u>current</u> 0.2 6.9 18.3	4 0 57 <1 903 968 996 1179 2933 history1 3 4 2 2 history1 0.2 6.4 18.3	2 0 60 904 993 1012 1178 3594 history2 3 4 4 4 history2 0.1 5.6 17.7



OIL ANALYSIS REPORT

VISUAL



	\sim		White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE	NONE NONE	NONE NONE		
			Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE		
23		Silt	scalar	*Visual	NONE	NONE	NONE	NONE			
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE			
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE			
	23 -		scalar	*Visual	NORML	NORML	NORML	NORML			
May31/23	Jul19/23	Sep 12/23 Oct17/23	Appearance Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
°C			Free Water	scalar	*Visual	20.L	NEG	NEG	NEG		
							NEG				
			FLUID PROPE		method	limit/base	current	history1	history2		
****			Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.4	13.8		
	\checkmark	$\sim\sim$	GRAPHS								
May31/23 +		Sep12/23	Ferrous Alloys	Salisa (Salisa)	Sep12/23 2 0ct17/23 0ct17/23	EZLEZNON					
			Viscosity @ 100%	. May31/23	Sep 12/23	Nov27/23 -					
			¹⁹	-		10.0	Base Number				
			18 - Abnormal					~	$\sim \sim$		
			17			(B/HO					
			0 16 Base								
			Base Base 53 14			.0.0 .0.0 Base Number (mg KOH/(d) 4.0					
					\sim	N Ise Nu					
			13 Abnormal			<u>2.0</u>	0 -				
			11			0.0					
			1/22	1/23 -	2/23 -			1/23	2/23		
			Dec1/22 Dec20/22 Mar10/23	May31/23 Jul19/23	Sep 12/23 Oct17/23	Nov27/23	Dec1/22 - Dec20/22 - Mar10/23 -	May31/23 Jul19/23	Sep 12/23 Oct17/23 Nov27/23		
	ABBOATCAY ate L2367	Laboratory Sample No Lab Numbe Unique Numl Test Packa	. : GFL0103478 er : 06025614 ber : 10770114 ge : FLEET	501 Madison Ave., Cary, NC 27513 Received : 05 Dec 2023 Diagnosed : 06 Dec 2023 Diagnostician : Wes Davis			Cor	GFL Environmental - 868 - Childersburg Fines Hauling (Alpine) 13737 Plant Rd Childersburg, AL US 35044 Contact: JONATHAN WILLIAMS			
			ort, contact Customer Ser				jc	onathan.willia	ms@gflenv.com		
			at are outside of the ISO pecifications are based on				(JCGM 106:2012)		T: F:		

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Submitted By: see also GFL868 - Chelsea Bryan