

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 425150

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.

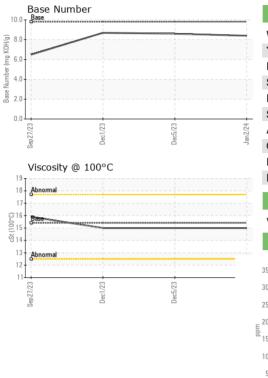
Fluid Condition

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	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093560	GFL0093606	GFL0093604
Sample Date		Client Info		02 Jan 2024	05 Dec 2023	01 Dec 2023
Machine Age	hrs	Client Info		20741	20624	20624
Oil Age	hrs	Client Info		117	298	298
Oil Changed		Client Info		Not Changd	Changed	Not Changd
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	26	32	26
Chromium	ppm	ASTM D5185m	>20	2	<1	<1
Nickel	ppm	ASTM D5185m	>4	- <1	0	<1
Titanium	ppm	ASTM D5185m	- T	<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm		>20	8	13	6
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m		4	3	4
Tin		ASTM D5185m	>15	+ <1	0	0
Vanadium	ppm ppm	ASTM D5185m	>15	<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Caumum	ρρπ	ASTIVI DJ I OJITI		0	0	0
	•••			-	-	
ADDITIVES	•••	method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	ASTM D5185m	0			history2 <1
			0	current	history1	
Boron	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2	history1 0	<1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	current 2 0	history1 0 2	<1 2
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2 0 56	history1 0 2 56	<1 2 55
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 2 0 56 <1	history1 0 2 56 0	<1 2 55 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 2 0 56 <1 809	history1 0 2 56 0 744	<1 2 55 0 737 1184 938
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 2 0 56 <1 809 1222	history1 0 2 56 0 744 1208	<1 2 55 0 737 1184
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	Current 2 0 56 <1 809 1222 1079	history1 0 2 56 0 744 1208 907	<1 2 55 0 737 1184 938
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	Current 2 0 56 <1 809 1222 1079 1299	history1 0 2 56 0 744 1208 907 1148	<1 2 55 0 737 1184 938 1159
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	Current 2 0 56 <1 809 1222 1079 1299 3058	history1 0 2 56 0 744 1208 907 1148 3082	<1 2 55 0 737 1184 938 1159 4338
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	Current 2 0 56 <1 809 1222 1079 1299 3058 Current	history1 0 2 56 0 744 1208 907 1148 3082 history1	<1 2 55 0 737 1184 938 1159 4338 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	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 limit/base	Current 2 0 56 <1 809 1222 1079 1299 3058 Current 7	history1 0 2 56 0 744 1208 907 1148 3082 history1 22	<1 2 55 0 737 1184 938 1159 4338 history2 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	Current 2 0 56 <1 809 1222 1079 1299 3058 Current 7 1	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0	<1 2 55 0 737 1184 938 1159 4338 history2 8 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	Current 2 0 56 <1 809 1222 1079 1299 3058 Current 7 1 3	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4	<1 2 55 0 737 1184 938 1159 4338 history2 8 0 2
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 Imit/base >25	Current 2 0 56 <1 809 1222 1079 1299 3058 Current 7 1 3 3 5 8 Current	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4 history1	<1 2 55 0 737 1184 938 1159 4338 history2 8 0 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	Current 2 0 56 <1 809 1222 1079 1299 3058 current 7 1 3 current 0.6	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4 history1 0.5	<1 2 55 0 737 1184 938 1159 4338 history2 8 0 2 history2 0.5
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	Current 2 0 56 <1 809 1222 1079 1299 3058 current 7 1 3 current 0.6 7.6	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4 history1 0.5 6.7	<1 2 55 0 737 1184 938 1159 4338 history2 8 0 2 history2 0.5 6.9
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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	Current 2 0 56 <1 809 1222 1079 1299 3058 Current 7 1 3 Current 0.6 7.6 19.6 Current	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4 history1 0.5 6.7 19.1 history1	<1 2 55 0 737 1184 938 1159 4338 1159 4338 1159 4338 0 2 8 0 2 history2 0.5 6.9 19.3 history2
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 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	Current 2 0 56 <1 809 1222 1079 1299 3058 current 7 1 3 current 0.6 7.6 19.6	history1 0 2 56 0 744 1208 907 1148 3082 history1 22 0 4 history1 0.5 6.7 19.1	<1 2 55 0 737 1184 938 1159 4338 history2 8 0 2 history2 0.5 6.9 19.3



OIL ANALYSIS REPORT



		VISUAL		method	limit/base	current	history1	history2		
Dec5/23 -		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		
Derf.//3	Jan2/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
ć	ă Ť	Oddr	scalar	*Visual	NORML	NORML	NORML	NORML		
		Emulsified Water	scalar	*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	15.0	15.0	15.0		
		GRAPHS								
		Ferrous Alloys								
22	3	iron								
Derf.//3	1000	nickel	Constant and a second	and the second sec						
		25-								
		E 20 E 15								
		10-								
		5								
				23	54					
		Sep27/23 Dec1/23		Dec5/23	Jan 2/24					
		∞ Non-ferrous Meta	ale							
		copper								
		8-								
		6-								
		2 -								
		0								
		Sep27/23 Dec1/23		Dec5/23	Jan 2/24					
		63		De	Jai					
		Viscosity @ 100°	С			Base Number				
		18 - Abnormal			10.0	Base				
		17-			([®] , ^{8.0}					
		Date Base			ý 9 6.0					
		(0)15 tr 15 tr 14			0.0 Base Number (mg KOH/g)					
		3 ₁₄			4.0	+				
		13 Abnormal			2.0					
		12								
		11		/23	0.0	123				
		Sep27/23 Dec1/23		Dec5/23	Jan 2/24	Sep 27/23	Dect/23	67/coan -		
Laboratory Sample No. Lab Numbe Unique Numb Certificate 12367 Test Packa		r : 06049713 Diagr er : 10810321 Diagr		i : 03 . ed : 04 .	ry, NC 27513 Jan 2024 Jan 2024 s Davis	GFL Enviro	GFL Environmental - 891 - Oklahoma City Hauli 1001 South Rockwe Oklahoma City, C US 7312 Contact: Andy Smi			
				00-237-1369			andrew.sm			