

OIL ANALYSIS REPORT

Sample Rating Trend



428015-901

Component

Diesel Engine

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.

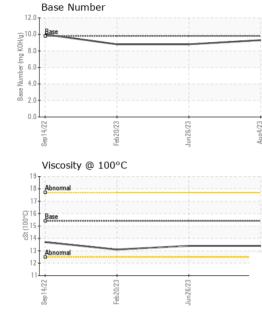
Fluid Condition

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		GFL0062202	GFL0062189	GFL0062242
Sample Date		Client Info		04 Aug 2023	26 Jun 2023	20 Feb 2023
Machine Age	hrs	Client Info		17020	17024	16850
Oil Age	hrs	Client Info		191	195	257
Oil Changed		Client Info		Not Changd	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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	5	5	11
Chromium	ppm	ASTM D5185m	>20	0	<1	0
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	<1
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	<1	1	0
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES			11 11 11			la la tarra O
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm		limit/base	current 8	history1 9	nistory2 4
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	8	9	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	8 2	9	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	8 2 65	9 0 60	4 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	8 2 65 0	9 0 60 <1	4 0 59 <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	8 2 65 0 886	9 0 60 <1 928	4 0 59 <1 883
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	8 2 65 0 886 1165	9 0 60 <1 928 1118	4 0 59 <1 883 1119
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	8 2 65 0 886 1165 1025	9 0 60 <1 928 1118 1031	4 0 59 <1 883 1119 941
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	8 2 65 0 886 1165 1025 1221	9 0 60 <1 928 1118 1031 1261	4 0 59 <1 883 1119 941 1164
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	8 2 65 0 886 1165 1025 1221 3418	9 0 60 <1 928 1118 1031 1261 3744	4 0 59 <1 883 1119 941 1164 3101
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	8 2 65 0 886 1165 1025 1221 3418 current	9 0 60 <1 928 1118 1031 1261 3744 history1	4 0 59 <1 883 1119 941 1164 3101 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 1010 1070 1150 1270 2060 imit/base >25	8 2 65 0 886 1165 1025 1221 3418 current 2	9 0 60 <1 928 1118 1031 1261 3744 history1 2	4 0 59 <1 883 1119 941 1164 3101 history2 4
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 1010 1070 1150 1270 2060 imit/base >25	8 2 65 0 886 1165 1025 1221 3418 current 2 3	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9	4 0 59 <1 883 1119 941 1164 3101 history2 4 13
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 imit/base >25	8 2 65 0 886 1165 1025 1221 3418 current 2 3 3 3	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3
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 >20 Imit/base >20	8 2 65 0 886 1165 1025 1221 3418 current 2 3 3 3 3	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1 1 history1	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3 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 Imit/base >20	8 2 65 0 886 1165 1025 1221 3418 <i>current</i> 2 3 3 3 <i>current</i> 0.1	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1 2 9 1 1 history1 0.2	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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	8 2 65 0 886 1165 1025 1221 3418 <i>current</i> 2 3 3 <i>current</i> 0.1 6.9	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1 2 9 1 history1 0.2 6.5	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3 history2 0.2 7.7
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	8 2 65 0 886 1165 1025 1221 3418 current 2 3 3 Current 0.1 6.9 17.7	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1 1 history1 0.2 6.5 18.6	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3 history2 0.2 7.7 18.5
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	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >3 >20 30 imit/base	8 2 65 0 886 1165 1025 1221 3418 Current 2 3 3 Current 0.1 6.9 17.7 Current	9 0 60 <1 928 1118 1031 1261 3744 history1 2 9 1 2 9 1 1 history1 0.2 6.5 18.6 history1	4 0 59 <1 883 1119 941 1164 3101 history2 4 13 3 history2 0.2 7.7 18.5 history2



OIL ANALYSIS REPORT



	VISUAL		method				history2	
	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	
un26/23 - Aug4/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Jun26/23 Aug4/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
	FLUID PROPE		method	limit/base	current	history1	history2	
	Visc @ 100°C	cSt	ASTM D445		13.4	13.4	13.1	
	GRAPHS	001	NOTIN DITO	10.4	10.4	10.4	10.1	
	Ferrous Alloys							
	¹⁶ I							
Jun 26/23	14- iron chromium							
Jun	12 - nickel							
	10							
	Md 8-							
	6		<u> </u>					
	4							
	2 - Phaneseterenerateren							
	53 53		723	23				
	Sep 14/22 Feb 20/23		Jun26/23	Aug4/23				
	∞ Non-ferrous Metal	c.	7					
		5						
	copper							
	8 - management tin							
	6							
	ш dd							
	4							
	2							
	A descent which is a second with the loss of the loss							
		Contraction of the local division of the loc	CO	~				
	ep14/22		un26/23	Aug4/2				
	S 11		Jur	AL				
	Viscosity @ 100°C				Base Number			
	18 - Abnormal			12.0				
	17-			10.0 \$	Base			
	© ¹⁶ Base			0.8 (OH/d) 6.0- 8ase Number (mg 4.0-				
	G 16 Base 00 15 3 14			<u>ل</u> 6.0 تو				
	³ 14 -			4.0				
	13 Abnormal							
	12-			2.0				
	11		m	0.0	5			
	Sep 14/22 Feb 20/23		Jun26/23	Aug4/23	Sep 14/22	Jun26/23	CCP	
	Sep Feb		Jun	Ач	Se	n n	<	
		501 Madis	son Ave., Ca	GFL Envi	GFL Environmental - 626 - Cadillac Haulin			
Laboratory	: WearCheck USA - 5			1501 Ron Wilson S				
Laboratory Sample No.		Received		Aug 2023		1501		
Sample No. Lab Number	: GFL0062202 : <mark>05923133</mark>	Diagnose	ed : 147	Aug 2023		1501	Cadillac, N	
Sample No. Lab Number Unique Number	: GFL0062202 : <mark>05923133</mark> : 10603080		ed : 147				Cadillac, N US 4960	
Sample No. Lab Number	: GFL0062202 : 05923133 : 10603080 : FLEET	Diagnose Diagnost	ed : 14 / ician : We	Aug 2023 s Davis		Contact: GA	Cadillac, N	

Submitted By: GARY BREWER

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