

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Machine Id 529134-7945 FREIGHTLINER CASCADIA 125 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (11 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

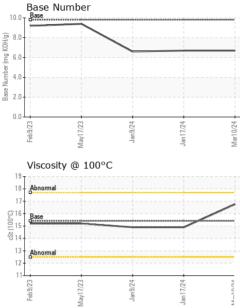
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

				Jan2024 Jan2024		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0115306	GFL0066515	GFL0066590
Sample Date		Client Info		10 Mar 2024	17 Jan 2024	09 Jan 2024
Machine Age	mls	Client Info		0	139068	2
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	15	19	17
Chromium	ppm	ASTM D5185m	>6	<1	<1	<1
Nickel	ppm	ASTM D5185m	>3	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>50	2	10	9
Lead	ppm	ASTM D5185m	>10	0	<1	0
Copper	ppm	ASTM D5185m	>50	7	5	4
		ASTM D5185m	>6	<1	<1	<1
Tin	ppm	AGTIM DJTOJII		N		
Tin Vanadium	ppm	ASTM D5185m		0	0	0
						0
Vanadium	ppm	ASTM D5185m	limit/base	0	0	
Vanadium Cadmium ADDITIVES	ppm	ASTM D5185m ASTM D5185m		0 0	0 0	0
Vanadium Cadmium ADDITIVES Boron	ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m	limit/base	0 0 current	0 0 history1	0 history2
Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	0 0 current 2	0 0 history1 109	0 history2 120
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	limit/base 0 0 60	0 0 current 2 0	0 0 history1 109 0	0 history2 120 <1
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	0 0 current 2 0 9	0 0 history1 109 0 49	0 history2 120 <1 47
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	0 0 current 2 0 9 <1	0 0 history1 109 0 49 <1	0 history2 120 <1 47 <1 268 1711
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	0 0 current 2 0 9 <1 72	0 0 history1 109 0 49 <1 273	0 history2 120 <1 47 <1 268
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070	0 0 current 2 0 9 <1 72 2076	0 0 history1 109 0 49 <1 273 1712	0 history2 120 <1 47 <1 268 1711
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	limit/base 0 0 60 0 1010 1070 1150	0 0 2 0 9 <1 72 2076 742	0 0 history1 109 0 49 <1 273 1712 998	0 history2 120 <1 47 <1 268 1711 889
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	limit/base 0 0 60 0 1010 1070 1150 1270	0 0 current 2 0 9 <1 72 2076 742 953	0 0 history1 109 0 49 <1 273 1712 998 1219	0 history2 120 <1 47 <1 268 1711 889 1132
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	limit/base 0 0 60 0 1010 1070 1150 1270 2060	0 0 2 0 9 <1 72 2076 742 953 3014	0 0 109 0 49 <1 273 1712 998 1219 3207	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 2 0 9 <1 72 2076 742 953 3014 current	0 0 109 0 49 <1 273 1712 998 1219 3207 history1	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 0 0 0 0 1010 1070 1150 1270 2060 limit/base >50	0 0 2 0 9 <1 72 2076 742 953 3014 current 15	0 0 109 0 49 <1 273 1712 998 1219 3207 history1 10	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 0 0 0 0 1010 1070 1150 1270 2060 limit/base >50	0 0 2 0 9 <1 72 2076 742 953 3014 current 15 0	0 0 109 0 49 <1 273 1712 998 1219 3207 history1 10 1	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5 2
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >50 >20	0 0 current 2 0 9 <1 72 2076 742 953 3014 current 15 0 <1	0 0 history1 109 0 49 <1 273 1712 998 1219 3207 history1 10 1 1 19	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5 2 2 19
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 250 250 220 20 20 20 20 20 20	0 0 2 0 9 <1 72 2076 742 953 3014 current 15 0 <1 <i>current</i>	0 0 history1 109 0 49 <1 273 1712 998 1219 3207 history1 10 1 10 1 19 <i>history1</i>	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5 2 2 19 history2
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 250 250 220 20 20 20 20 20 20	0 0 current 2 0 9 <1 72 2076 742 953 3014 current 15 0 <1 current 0.1	0 0 109 109 0 49 <1 273 1712 998 1219 3207 history1 10 1 10 1 19 history1 0.4	0 history2 120 <1 47 268 1711 889 1132 2811 history2 5 2 19 history2 0.4
Vanadium Cadmium ADDITIVES 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 2060 2060 2060 2060 2060 2	0 0 2 0 9 <1 72 2076 742 953 3014 <i>current</i> 15 0 <1 <i>current</i> 0.1 4.6	0 0 history1 109 0 49 <1 273 1712 998 1219 3207 history1 10 1 10 1 19 history1 0.4 8.5	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5 2 2 19 history2 0.4 8.1
Vanadium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >50 imit/base >20 >3 >20 >30	0 0 current 2 0 9 <1 72 2076 742 953 3014 <i>current</i> 15 0 <1 5 0 <1 0 <1 0 15	0 0 history1 109 0 49 <1 273 1712 998 1219 3207 history1 10 1 10 1 19 history1 0.4 8.5 21.5	0 history2 120 <1 47 <1 268 1711 889 1132 2811 history2 5 2 19 history2 0.4 8.1 21.2



OIL ANALYSIS REPORT

VISUAL



		VISUAL		method	iiiiii/base	current	nistory i	nistory2
		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
Jan 9/24 -	7/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jan	Jan 17/24 Mar1 0/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
		FLUID PROPI		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	16.76	14.9	14.9
		GRAPHS						
		Ferrous Alloys						
24	24	iron		-				
Jan 9/24	Jan 17/24	15 - mickel			1			
,	-h 44							
		<u>۾</u> 10						
		5-						
		O PARTY & PRODUCTION OF THE OWNER						
		Feb 9/23 ay 1 7/23	Jan 9/24	7/24	0/24			
		Feb May1	Jan	Jan 17/24	Mar10/24			
		Non-ferrous Meta	als					
		12 T						
		10 - copper		 				
		tin						
		8			1			
		E 6-	\mathbf{i}					
		4						
		2						
		0		accontent Contention				
		Feb 9/23 May1 7/23	Jan9/24	Jan 17/24	Mar10/24			
		W		Jan	Mai			
		Viscosity @ 100°	С			Base Number		
		19		1	10.0			
		18 - Abnormal						
		Q		!				
		17			(B/HC)-		
		17).8 (0H/d) 1.0 K0H/d			
		17).8 (mg KOH/g)).	<u> </u>	
		Q			.6.0 Momber (mg KOH/d) 9 Number 4.0).		
		17			0.6 Mmper (mg KOH/))-		
		17- 16- 15- 15- 14- 12- 12- 12- 12- 12- 12- 12- 12			0.6 8.0 0.6 0.00H(3) 0.8 8888 Winnber (uid KOH(3) 0.2 8888 2.0)-		
		17- 17- Base Base 101 15- 37 14- 13- Abnomal 12- 11- 14- 14- 14- 14- 14- 14- 14			HHO See 2.0]- 		4
		17- 17- Base Base 101 15- 37 14- 13- Abnomal 12- 11- 14- 14- 14- 14- 14- 14- 14	n9/24	11/24	HHO See 2.0]- 	m9/24	11724
		17- 16- 15- 14- 13- Abnomal 12-	Jan9/24	Jan17/24	HOX BUL Base Mumber Base 300)	Jan9/24	Jan17/24
		17 16 15 14 13 12 11 12 11 12 11 12 11 12 12			Mar10/24 6.0 8 Base Number (mg KOH)	Feb9/23		
4	Laboratory Samplo No	17 17 10-001) tso 14 13 10-001) tso 14 13 10-001) tso 14 13 10-001) tso 14 10-001) tso 14 10-001) tso 14 10-001) tso 14 10-001) tso 14 10-001) tso 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-001 12-00	01 Madiso	n Ave., Cary	HHO3 Bul Jaquing area +top 10 a	Feb9/23	ronmental - 980 -	Northside Hauli
NAB	Sample No.	Base Base Base Base Base Coolid 15 14 13 14 13 14 12 11 E266 E2/L1 Ke WearCheck USA - 5 : GFL0115306	01 Madiso Recei	n Ave., Cary i ved : 22	HHO) Buil agent HHO) Buil agent 4.0 +200 Lew , NC 27513 2 Mar 2024	Feb9/23	ronmental - 980 -	Northside Hauli Ridge Park [
	Sample No. Lab Number	Base Base Base Base Base Base Base CULL Base CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL CULL	01 Madiso Recei Teste	n Ave., Cary ived : 22 d : 28	HHO) Buil additional a	GFL Envi	ronmental - 980 -	Northside Hauli e Ridge Park I Houston, T
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ificate 12367 discuss this	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 5 : GFL0115306 : 10940437	01 Madiso Recei Teste Diagr	n Ave., Cary ived : 22 id : 28 nosed : 28	, NC 27513 Mar 2024 Mar 2024 - Don	GFL Envi	ronmental - 980 - 1820 Candle Contac	Northside Hauli e Ridge Park I Houston, T US 7707

