

OIL ANALYSIS REPORT

Sample Rating Trend

WATER

Area UPS CANADA Machine Id FREIGHTLINER 863911 Component Diesel Engine

DIAGNIGOIO

SAE 5W30 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Fluid

All component wear rates are normal.

Contamination

There is a trace of moisture present in the oil. Test for glycol is negative.

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		PC0085535	PC0085567	
Sample Date		Client Info		12 Apr 2024	19 Dec 2023	
Machine Age	kms	Client Info		307900	295844	
Oil Age	kms	Client Info		0	0	
Oil Changed		Client Info		Not Changd	N/A	
Sample Status				MARGINAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	0.5	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>80	65	9	
Chromium	ppm	ASTM D5185(m)	>5	2	0	
Nickel	ppm	ASTM D5185(m)	>2	<1	<1	
Titanium	ppm	ASTM D5185(m)		0	0	
Silver	ppm	ASTM D5185(m)	>3	0	0	
Aluminum	ppm	ASTM D5185(m)	>30	2	1	
Lead	ppm	ASTM D5185(m)	>30	2	<1	
Copper	ppm	ASTM D5185(m)	>150	29	2	
Tin	ppm	ASTM D5185(m)	>5	0	0	
Antimony	ppm	ASTM D5185(m)		0	0	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base	current 30	history1 153	history2
	ppm ppm		limit/base			
Boron		ASTM D5185(m)	limit/base	30	153	
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	limit/base	30 0	153 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72	153 0 62	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1	153 0 62 0	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544	153 0 62 0 552	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544 1212	153 0 62 0 552 1105	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544 1212 573	153 0 62 0 552 1105 630	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544 1212 573 772	153 0 62 0 552 1105 630 733	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		30 0 72 <1 544 1212 573 772 2157	153 0 62 0 552 1105 630 733 2261	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		30 0 72 <1 544 1212 573 772 2157 <1	153 0 62 0 552 1105 630 733 2261 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544 1212 573 772 2157 <1 current	153 0 62 0 552 1105 630 733 2261 <1 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	30 0 72 <1 544 1212 573 772 2157 <1 current 9	153 0 62 0 552 1105 630 733 2261 <1 history1 12	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20	30 0 72 <1 544 1212 573 772 2157 <1 current 9 17	153 0 62 0 552 1105 630 733 2261 <1 ×1 history1 12 2	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20	30 0 72 <1 544 1212 573 772 2157 <1 current 9 17 1	153 0 62 0 552 1105 630 733 2261 <1 <1 history1 12 2 1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 >20	30 0 72 <1 544 1212 573 772 2157 <1 current 9 17 1 1 0.159	153 0 62 0 552 1105 630 733 2261 <1 <1 history1 12 2 2 1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 >20	30 0 72 <1 544 1212 573 772 2157 <1 current 9 17 1 1 0.159 ▲ 1599	153 0 62 0 552 1105 630 733 2261 <1 <1 history1 12 2 1 1 2 1 1 	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5304° ASTM D6304° ASTM D6304°	limit/base >20 >20 >20 >0.2 >2000	30 0 72 <1 544 1212 573 772 2157 <1 current 9 17 1 9 17 1 0.159 0.0	153 0 62 0 552 1105 630 733 2261 <1 *1 history1 12 2 1 1 2 1 NEG	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 >20 >0.2 >2000 imit/base	30 0 72 <1 544 1212 573 772 2157 <1 0 0.159 0.0 0 0 0 0	153 0 62 0 552 1105 630 733 2261 <1 * 12 2 2 1 1 2 2 1 * * * * * * * * * *	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D7922*	limit/base >20 >20 >20 >0.2 >2000 imit/base >3	30 0 72 <1 544 1212 573 772 2157 <1 <i>current</i> 9 17 1 0.159 0.0 <i>current</i>	153 0 62 0 552 1105 630 733 2261 <1 <1 12 2 1 1 2 1 1 2 1 NEG NEG 0	 history2 -



OIL ANALYSIS REPORT

Severe				method	limit/b	ase	current	history1	
+		Oxidation		ASTM D7414*	>25		12.8	9.1	
		Base Number (BN)	mg KOH/g				4.77	8.23	
		VISUAL		method	limit/b		current	history1	history2
Abnormal		Emulsified Water Free Water	scalar scalar	Visual* Visual*	>0.2	_	.2% NEG	NEG NEG	
	24 -								
	Apr1 2/24	FLUID PROPE		method	limit/b	ase	current	history1	history2
Glycol Contamination		Visc @ 40°C Visc @ 100°C	cSt cSt	ASTM D7279(m)	60.0		54.9 0.5	63.1	
sodium	T ^{0.25}	Viscosity Index (VI)	Scale	ASTM D7279(m) ASTM D2270*	11.0 177		9.5 157	10.9 165	
potassium		GRAPHS	Coulo	NOTIN DEEPO	.,,		101	100	
	0.15 e	Iron (ppm)					Lead (ppm)		
		140 120				70 60	Severe		
/		100 - Abnormal				50-			
53						e 40 dd 30	Abnormal		
Dec19/23	Apr12/24	40				20-			
T-IR (Direct Trend)		20				10· 0-			
Oxidation		Dec19/23			Apr12/24		Dec19/23		
Abnormal Sulfation		 Aluminum (ppm)			A		Chromium ((mac	
and the set of the set	a the first of the last of the	60 Severe				12			
		50				10-	0		
1777-1777-00-040-00-040-00-00-00-00-00-00-00-00-0	***************************************					udd 6.	Abnormal		
		20 -				4	Q		
ú.	4					1			
Jec1 9/23	Apr12/24	10				2-			
	Apr12/24	10 0 EZZ/61:			12/24	2.	19/23		
Viscosity @ 40°C		Dec19/23			Apr12/24		Dec19/23		
Viscosity @ 40°C	Apri 2/24	0			Apr12/24		Silicon (ppm)	
Viscosity @ 40°C Abnormal	Apr1224	Copper (ppm)			Apr12/24)	
Viscosity @ 40°C	April224	Copper (ppm)			Apri 2/24	40 30 -	Silicon (ppm)	
Viscosity @ 40°C	Apr1224	Copper (ppm)			Apr12/24	40- 30- E.20-	Silicon (ppm)	
Viscosity @ 40°C Abnormal Base		Copper (ppm)			Apri2/24	40 30 -	Silicon (ppm)	
Viscosity @ 40°C Abnormal Base		Copper (ppm) 300 250 200 E 150 100 50 0				40- 30- E.20-	Silicon (ppm)	
Viscosity @ 40°C	Apri224	Copper (ppm)			April2/24	40- 30- E.20-	Silicon (ppm)	
Viscosity @ 40°C		Copper (ppm)				40 - 30 - 트 20 - 10 - 0 -	Silicon (ppm		
Viscosity @ 40°C		Copper (ppm)				40 30- 520- 10- 0- 10.0-	Silicon (ppm		
Viscosity @ 40°C Abnormal Base Abnormal Viscosity @ 100°C		Copper (ppm)				40- 30- 20- 10- 0- 10.0- 10.0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0	Silicon (ppm		
Viscosity @ 40°C Abnormal Base Abnormal Viscosity @ 100°C		Copper (ppm)				40- 30- 20- 10- 0- 10.0- 10.0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0	Silicon (ppm		
Viscosity @ 40°C		Copper (ppm)				40- 30- 10- 10- 10.0- (0)H0X Bu) Jac	Silicon (ppm		
Viscosity @ 40°C		Copper (ppm)				40- 30- 20- 10- 0- 10.0- 10.0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0	Silicon (ppm		

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