

OIL ANALYSIS REPORT

Area **EBI DE COSTA RICA** Machine Id **FREIGHTLINER 1043** Component

Hydraulic System

PETRO CANADA HYDREX AW 68 (45 GAL)

DIAGNOSIS

Recommendation

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

Wear

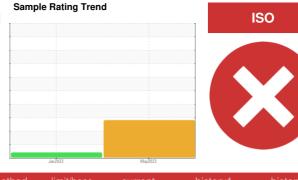
All component wear rates are normal.

Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the oil.

Fluid Condition

The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0073938	PC0058371	
Sample Date		Client Info		27 May 2023	26 Jan 2022	
Machine Age	hrs	Client Info		11026	8224	
Oil Age	hrs	Client Info		3477	572	
Oil Changed		Client Info		Not Changd	N/A	
Sample Status				SEVERE	ABNORMAL	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	7	5	
Chromium	ppm	ASTM D5185(m)	>10	<1	<1	
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	
Titanium	ppm	ASTM D5185(m)		0	0	
Silver	ppm	ASTM D5185(m)		0	<1	
Aluminum	ppm	ASTM D5185(m)	>10	1	<1	
Lead	ppm	ASTM D5185(m)	>10	0	<1	
Copper	ppm	ASTM D5185(m)	>75	<1	4	
Tin	ppm	ASTM D5185(m)	>10	0	0	
Antimony	ppm	ASTM D5185(m)		0	<1	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	<1	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base	current 2	history1 4	history2
	ppm ppm		0		· · · ·	
Boron		ASTM D5185(m)	0	2	4	
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0	2 0	4	
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	2 0 <1	4 0 <1	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0	2 0 <1 0	4 0 <1 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)	0 0 0 0 0	2 0 <1 0 2	4 0 <1 0 3	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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)	0 0 0 0 0 50	2 0 <1 0 2 88 329 389	4 0 <1 0 3 140 335 336	
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) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330	2 0 <1 0 2 88 329	4 0 <1 0 3 140 335	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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)	0 0 0 0 0 50 330 430	2 0 <1 0 2 88 329 389	4 0 <1 0 3 140 335 336	
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)	0 0 0 0 0 50 330 430	2 0 <1 0 2 88 329 389 783	4 0 <1 0 3 140 335 336 850	
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)	0 0 0 0 50 330 430 760	2 0 <1 0 2 88 329 389 783 <1	4 0 <1 0 3 140 335 336 850 <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)	0 0 0 0 50 330 430 760	2 0 <1 0 2 88 329 389 783 <1 <i>Current</i>	4 0 <1 0 3 140 335 336 850 <1 history1	
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)	0 0 0 0 50 330 430 760	2 0 <1 0 2 88 329 389 783 <1 current 3	4 0 <1 0 3 140 335 336 850 <1 history1 2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm T S	ASTM D5185(m) ASTM D5185(m)	0 0 0 50 330 430 760 Iimit/base	2 0 <1 0 2 88 329 389 783 <1 current 3 <1 1	4 0 <1 0 3 140 335 336 850 <1 history1 2 1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm T S	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 Imit/base >20	2 0 <1 0 2 88 329 389 783 <1 current 3 <1 1	4 0 <1 0 3 140 335 336 850 <1 history1 2 1 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 T S	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 imit/base >20	2 0 <1 0 2 88 329 389 783 <1 Current 3 <1 1 Current	4 0 <1 0 3 140 335 336 850 <1 history1 2 1 2 1 2 <i>history1</i>	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Silicon Sodium Potassium FLUID CLEANI Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm T S	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 760 Iimit/base >20 Iimit/base >20	2 0 <1 0 2 88 329 389 783 <1 current 3 <1 1 current	4 0 <1 0 3 140 335 336 850 <1 history1 2 1 2 1 2 1 2 1 2 1 2 1 2	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm T S	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 50 520 520 520 520 520 5000 51300	2 0 <1 0 2 88 329 389 783 <1 Current 3 <1 1 1 Current 1 57337 ▲ 7744	4 0 <1 0 3 140 335 336 850 <1	 history2 history2

ASTM D7647 >10

ASTM D7647 >3

5

0

ISO 4406 (c) >19/17/14 **23/20/16**

Particles >38µm

Particles >71µm

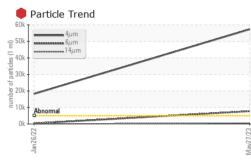
Oil Cleanliness

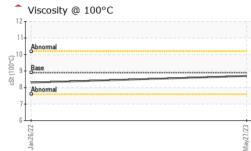
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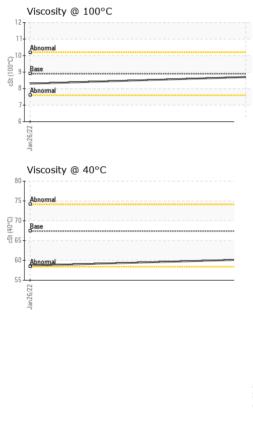
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OIL ANALYSIS REPORT







	VISUAL		method	limit/base	current	history1	history2
	White Metal	scalar	Visual*	NONE	NONE	NONE	
	Yellow Metal	scalar	Visual*	NONE	NONE	NONE	
	Precipitate	scalar	Visual*	NONE	NONE	NONE	
	Silt	scalar	Visual*	NONE	NONE	NONE	
	Debris	scalar	Visual*	NONE	VLITE	NONE	
	Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	
7/23 .	Appearance	scalar	Visual*	NORML	NORML	NORML	
May27/23	Odor	scalar	Visual*	NORML	NORML	NORML	
	Emulsified Water	scalar	Visual*	>0.1	NEG	NEG	
	Free Water	scalar	Visual*		NEG	NEG	
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	Visc @ 40°C	cSt	ASTM D7279(m)	67.4	60.2	58.7	
	Visc @ 100°C	cSt	ASTM D7279(m)	8.9	8.7	8.3	
	Viscosity Index (VI)	Scale	ASTM D2270*	105	118	111	
	SAMPLE IMAG	ES	method	limit/base	current	history1	history2
May27/23					BREAK		
	Color				PC007389		no image
	Bottom						no image
	GRAPHS						
	Ferrous Alloys			491,52	Particle Count	:	T2
	8 - iron			122,8	80.4		-2
	E 6				Severe		
	2			30,72	20-		12
				E 1,61	Abnormal		
	an 26/22			May27/23 s (per 1 ml)	20-	N	+1
	7	-		M. icles (BO-		
	Non-ferrous Metal	5		of part			
	8 - copper			May27/23. number of particles (per 1 ml)	20 -		
				in in	30 -	/	-
	2				8-		
	0	Manual Contractor		23			
	Jan 26/22			May27/23	2-		
				Mč	0 4μ 6μ	14µ 21µ	38µ 71,
	Viscosity @ 40°C						
	75 Abnormal						
	00 00 00 00 00 00 00 00 00 00 00 00 00						
	60 - Abnormal						
	Jan 26/22			1/23			
	Jan2			May27/23			
CALA Laboratory	: WearCheck - C8-11						
Sample No.		Receiveo Diagnos		Jul 2023 Jul 2023	Contiguo F	FANAL, frente a la Auto	pista Bernardo S Grecia
Accredited Unique Number		Diagnost		s Davis			Grecia C
Test Package	: MOB 2 (Additional ⁻	Tests: KV	/100, VI)			Contact: E	Erick Bogant
o discuss this sample report, est denoted (*) outside scope						iones@lubricante T: 1	escanada. (115)062-1
lidity of results and interpret.							115)062-1

Validity of results and interpretation are based on the sample and information as supplied.

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