

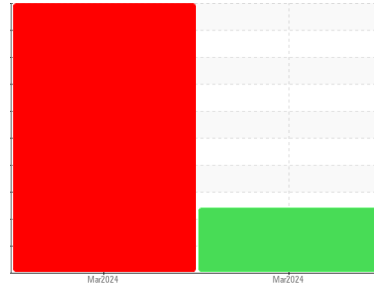


OIL ANALYSIS REPORT



Area
MICHEL MILLER INC [02625862]
 Machine Id
CATERPILLAR 349-07 860 (S/N RYG21005)
 Component
Hydraulic System
 Fluid
PANOLIN HLP SYNTH 46 (217 LTR)

Sample Rating Trend



CONTAMINANT



DIAGNOSIS

▲ Recommendation

Nous recommandons le remplacement des filtres de ce composant.

Wear

Les taux d'usure de tous les composants sont normaux.

▲ Contamination

Il y a une légère quantité de limon (particules de 4 à 14 microns) dans l'huile. Il y a une concentration modérée (7.9%) d'huile minérale présente dans le fluide. La teneur en eau est négligeable.

● Fluid Condition

Le AN est acceptable pour ce fluide.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	WC0893398	WC	---
Sample Date	Client Info	06 Mar 2024	06 Mar 2024	---
Machine Age	hrs	Client Info	1128	1115
Oil Age	hrs	Client Info	0	0
Oil Changed	Client Info	N/A	N/A	---
Sample Status		ABNORMAL	SEVERE	---

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	>20	2	2
Chromium	ppm	ASTM D5185(m)	>10	0	0
Nickel	ppm	ASTM D5185(m)	>10	0	<1
Titanium	ppm	ASTM D5185(m)		<1	0
Silver	ppm	ASTM D5185(m)		0	0
Aluminum	ppm	ASTM D5185(m)	>10	0	<1
Lead	ppm	ASTM D5185(m)	>10	0	0
Copper	ppm	ASTM D5185(m)	>75	1	1
Tin	ppm	ASTM D5185(m)	>10	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	
Boron	ppm	ASTM D5185(m)	0	<1	<1
Barium	ppm	ASTM D5185(m)	0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0
Manganese	ppm	ASTM D5185(m)	0	0	0
Magnesium	ppm	ASTM D5185(m)	0	<1	<1
Calcium	ppm	ASTM D5185(m)	0	28	38
Phosphorus	ppm	ASTM D5185(m)	1700	1443	1463
Zinc	ppm	ASTM D5185(m)	0	143	153
Sulfur	ppm	ASTM D5185(m)	1350	1542	1487
Lithium	ppm	ASTM D5185(m)		<1	<1

CONTAMINANTS

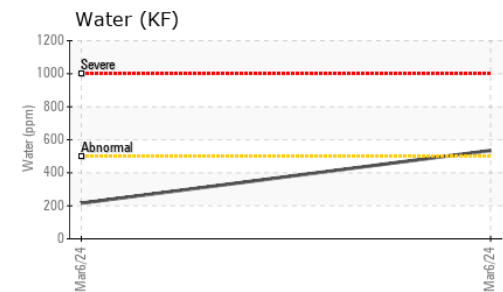
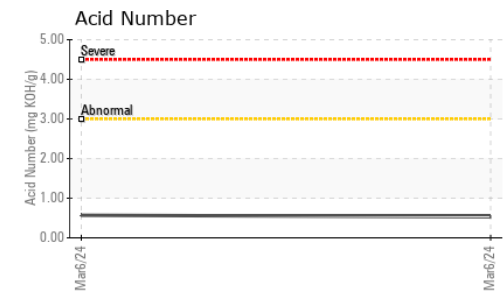
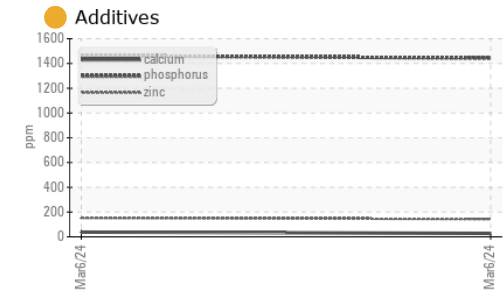
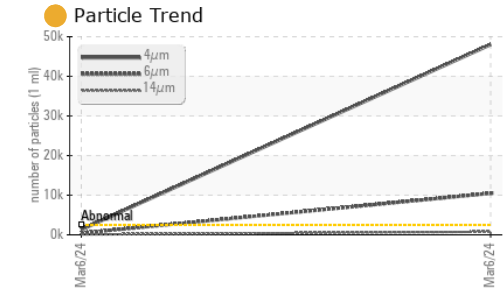
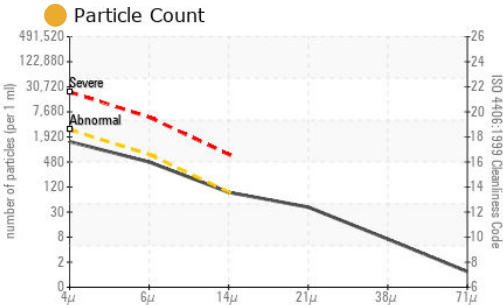
method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>20	<1	<1
Sodium	ppm	ASTM D5185(m)		1	1
Potassium	ppm	ASTM D5185(m)	>20	<1	<1
Water	%	ASTM D6304*	>0.05	0.053	0.021
ppm Water	ppm	ASTM D6304*	>500	535	216

INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844*		0	0
Nitration	Abs/cm	ASTM D7624*		3.8	3.5
Sulfation	Abs/.1mm	ASTM D7415*		150.7	153.0
Mineral Oil Content	%	ASTM D7418*	<5.0%	7.9	8.1



OIL ANALYSIS REPORT



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	1296	▲ 48030	---
Particles >6µm	ASTM D7647	>640	421	▲ 10482	---
Particles >14µm	ASTM D7647	>80	79	▲ 769	---
Particles >21µm	ASTM D7647	>20	35	▲ 223	---
Particles >38µm	ASTM D7647	>4	6	● 9	---
Particles >71µm	ASTM D7647	>3	1	1	---
Oil Cleanliness	ISO 4406 (c)	>18/16/13	17/16/13	▲ 23/21/17	---

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	140.7	142.0	---
Acid Number (AN)	mg KOH/g	ASTM D974*	0.53	0.57	---

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	---
Yellow Metal	scalar	Visual*	NONE	NONE	---
Precipitate	scalar	Visual*	NONE	NONE	---
Silt	scalar	Visual*	NONE	NONE	---
Debris	scalar	Visual*	NONE	NONE	---
Sand/Dirt	scalar	Visual*	NONE	NONE	---
Appearance	scalar	Visual*	NORML	NORML	---
Odor	scalar	Visual*	NORML	NORML	---
Emulsified Water	scalar	Visual*	NEG	NEG	---
Free Water	scalar	Visual*	NEG	NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	47.0	44.2	44.4
Visc @ 100°C	cSt	ASTM D7279(m)	8.1	7.9	8.0
Viscosity Index (VI)	Scale	ASTM D2270*	146	151	153

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					no image
Bottom					no image



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0893398 **Received** : 28 Mar 2024
Lab Number : **02625492** **Tested** : 02 Apr 2024
Unique Number : 5750611 **Diagnosed** : 02 Apr 2024 - Bill Quesnel
Test Package : MOB 2 (Additional Tests: TAN Man)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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MINERAL OIL CONTENT REPORT

FAIL



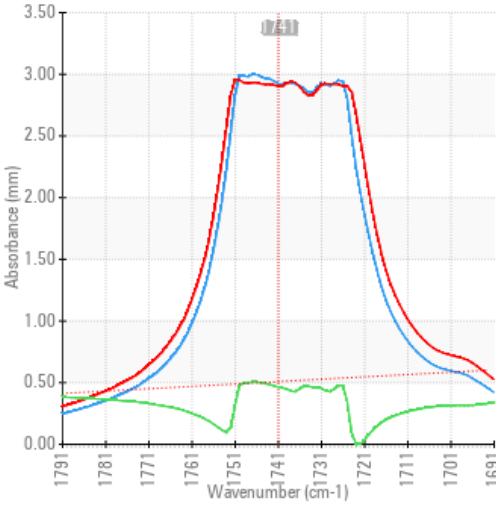
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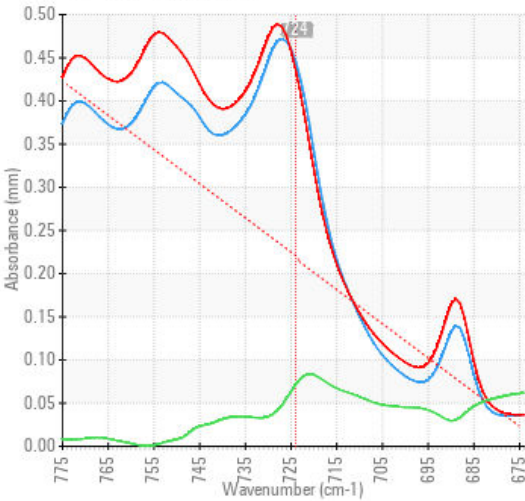
SPECTRAL ANALYSIS

		method	limit/base	current	history1	history2
Zinc	ppm	ASTM D5185(m)	0	● 143	● 153	---
Mineral Oil Content	%	ASTM D7418*	<5.0%	▲ 7.9	▲ 8.1	---

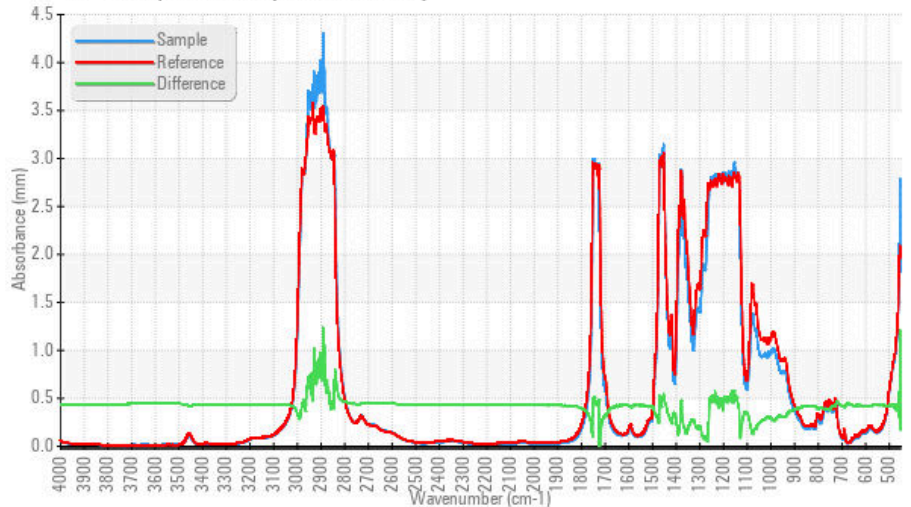
FT-IR - Esters I



FT-IR - Esters II



FT-IR Spectrum (Absorbance)



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