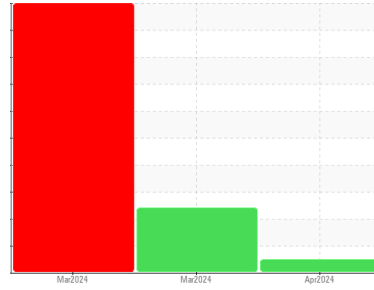




OIL ANALYSIS REPORT

Area
MICHEL MILLER INC [02548846]
 Machine Id
CATERPILLAR 349-07 860 (S/N RYG21005)
 Component
Hydraulic System
 Fluid
PANOLIN HLP SYNTH 46 (217 LTR)

Sample Rating Trend



NORMAL



DIAGNOSIS

Recommendation

Échantillonner de nouveau l'équipement au prochain intervalle de vidange afin d'en surveiller la condition.

Wear

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

Contamination

Il y a une faible concentration (<5.0%) d'huile minérale présente dans le fluide. La propreté du système est acceptable pour votre objectif de propreté ISO 4406. La teneur en eau est négligeable. La propreté du système et du fluide est acceptable.

Fluid Condition

Le AN est acceptable pour ce fluide. L'état de l'huile permet d'en prolonger l'utilisation.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC	WC0893398	WC
Sample Date	Client Info		05 Apr 2024	06 Mar 2024	06 Mar 2024
Machine Age	hrs	Client Info	0	1128	1115
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			NORMAL	ABNORMAL	SEVERE

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m) >20	<1	2	2
Chromium	ppm	ASTM D5185(m) >10	0	0	0
Nickel	ppm	ASTM D5185(m) >10	0	0	<1
Titanium	ppm	ASTM D5185(m)	<1	<1	0
Silver	ppm	ASTM D5185(m)	0	0	0
Aluminum	ppm	ASTM D5185(m) >10	0	0	<1
Lead	ppm	ASTM D5185(m) >10	0	0	0
Copper	ppm	ASTM D5185(m) >75	<1	1	1
Tin	ppm	ASTM D5185(m) >10	0	0	0
Antimony	ppm	ASTM D5185(m)	0	0	0
Vanadium	ppm	ASTM D5185(m)	0	0	0
Beryllium	ppm	ASTM D5185(m)	0	0	0
Cadmium	ppm	ASTM D5185(m)	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m) 0	<1	<1	<1
Barium	ppm	ASTM D5185(m) 0	0	0	0
Molybdenum	ppm	ASTM D5185(m) 0	0	0	0
Manganese	ppm	ASTM D5185(m) 0	0	0	0
Magnesium	ppm	ASTM D5185(m) 0	<1	<1	<1
Calcium	ppm	ASTM D5185(m) 0	19	28	38
Phosphorus	ppm	ASTM D5185(m) 1700	1457	1443	1463
Zinc	ppm	ASTM D5185(m) 0	77	143	153
Sulfur	ppm	ASTM D5185(m) 1350	1340	1542	1487
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

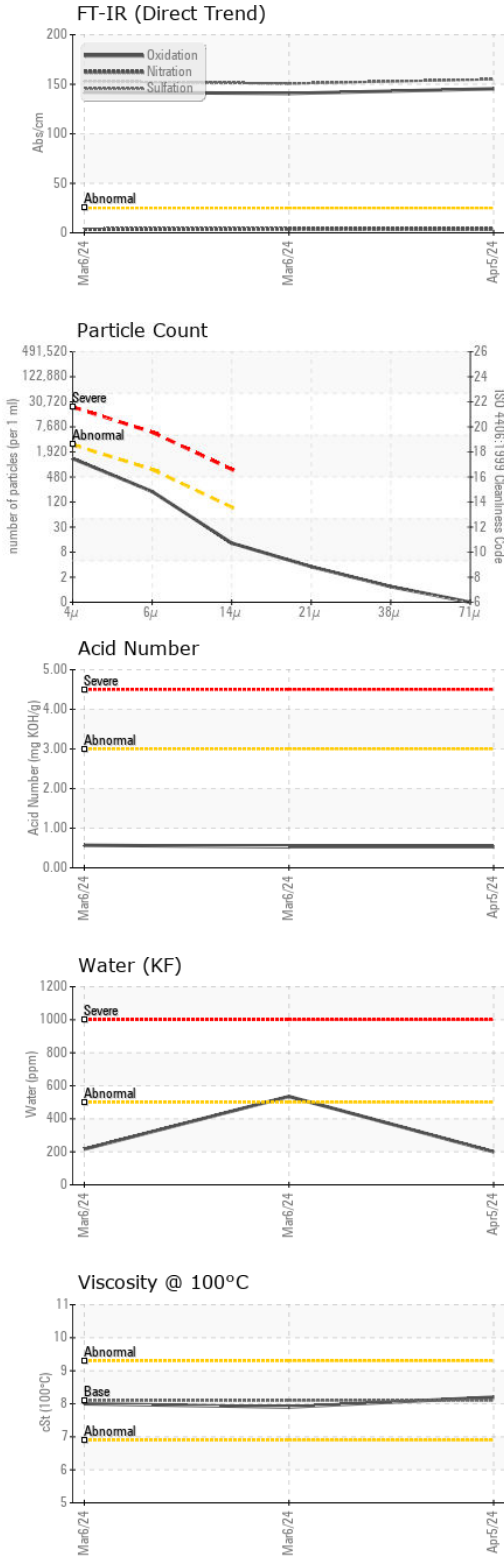
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >20	0	<1	<1
Sodium	ppm	ASTM D5185(m)	<1	1	1
Potassium	ppm	ASTM D5185(m) >20	<1	<1	<1
Water	%	ASTM D6304* >0.05	0.020	0.053	0.021
ppm Water	ppm	ASTM D6304* >500	200	535	216

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	0	0	0
Nitration	Abs/cm	ASTM D7624*	3.7	3.8	3.5
Sulfation	Abs/.1mm	ASTM D7415*	155.0	150.7	153.0
Mineral Oil Content	%	ASTM D7418* <5.0%	<5.0	7.9	8.1



OIL ANALYSIS REPORT



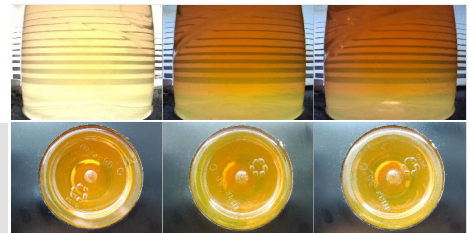
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	1168	1296	▲ 48030
Particles >6µm	ASTM D7647	>640	189	421	▲ 10482
Particles >14µm	ASTM D7647	>80	11	79	▲ 769
Particles >21µm	ASTM D7647	>20	3	35	▲ 223
Particles >38µm	ASTM D7647	>4	1	6	● 9
Particles >71µm	ASTM D7647	>3	0	1	1
Oil Cleanliness	ISO 4406 (c)	>18/16/13	17/15/11	17/16/13	▲ 23/21/17

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	145.4	140.7	142.0
Acid Number (AN)	mg KOH/g	ASTM D974*	0.53	0.53	0.57

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	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	NEG	NEG	NEG
Free Water	scalar	Visual*	NEG	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					
Bottom					



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC
Lab Number : 02627769
Unique Number : 5760901
Test Package : MOB 2 (Additional Tests: TAN Man)

Received : 09 Apr 2024
Tested : 10 Apr 2024
Diagnosed : 15 Apr 2024 - Bill Quesnel

Envirolin Canada
 520 rue Adanac
 Quebec, QC
 CA G1C 7B7

Contact: Patrick Levesque
 patrick.levesque@envirolin.com
 T: (418)623-1216
 F: (418)660-8889

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.



MINERAL OIL CONTENT REPORT

PASS



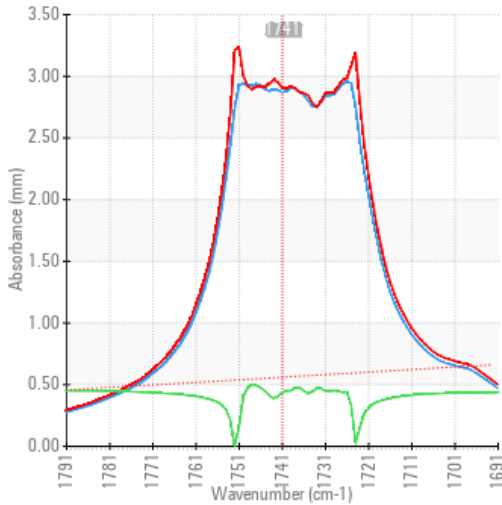
Area
MICHEL MILLER INC [02548846]
 Machine Id
CATERPILLAR 349-07 860 (S/N RYG21005)
 Component
Hydraulic System
 Fluid
PANOLIN HLP SYNTH 46 (217 LTR)



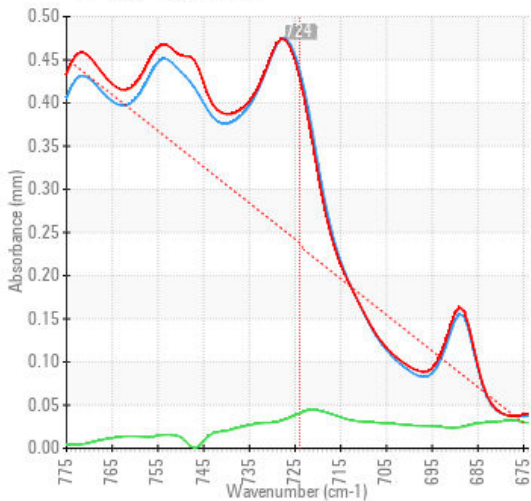
SPECTRAL ANALYSIS

		method	limit/base	current	history1	history2
Zinc	ppm	ASTM D5185(m)	0	77	● 143	● 153
Mineral Oil Content	%	ASTM D7418*	<5.0%	<5.0	▲ 7.9	▲ 8.1

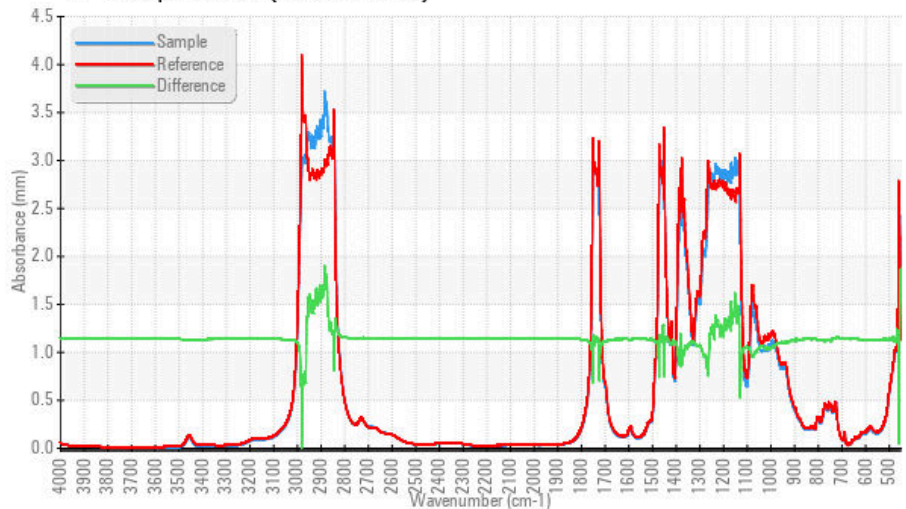
FT-IR - Esters I



FT-IR - Esters II



FT-IR Spectrum (Absorbance)



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC
Lab Number : 02627769
Unique Number : 5760901
Test Package : MOB 2 (Additional Tests: TAN Man)
Received : 09 Apr 2024
Tested : 10 Apr 2024
Diagnosed : 15 Apr 2024 - Bill Quesnel

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.

EnviroLin Canada

520 rue Adanac
 Quebec, QC
 CA G1C 7B7

Contact: Patrick Levesque
 patrick.levesque@envirolin.com

T: (418)623-1216
 F: (418)660-8889

This page left intentionally blank