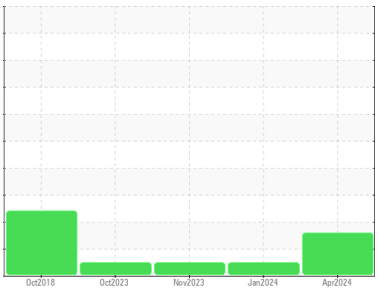
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
KOVATERRA MC100D FMC-004 (S/N 6092)
Component
Diesel Engine
Fluid
MOBIL 15W40 (8 LTR)

DIAGNOSIS

Recommendation
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0928374**	WC0892430	WC0883859
Sample Date		Client Info		**06 Apr 2024**	27 Jan 2024	30 Nov 2023
Machine Age	hrs	Client Info		**1524**	1320	1087
Oil Age	hrs	Client Info		**250**	0	250
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>100	**55**	13	11
Chromium	ppm	ASTM D5185(m)	>20	**4**	<1	<1
Nickel	ppm	ASTM D5185(m)	>4	**<1**	<1	<1
Titanium	ppm	ASTM D5185(m)		**<1**	0	0
Silver	ppm	ASTM D5185(m)	>3	**0**	0	<1
Aluminum	ppm	ASTM D5185(m)	>20	**18**	2	2
Lead	ppm	ASTM D5185(m)	>40	**0**	<1	0
Copper	ppm	ASTM D5185(m)	>330	**2**	2	1
Tin	ppm	ASTM D5185(m)	>15	**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)		**36**	37	33
Barium	ppm	ASTM D5185(m)		**<1**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**39**	40	43
Manganese	ppm	ASTM D5185(m)		**1**	0	<1
Magnesium	ppm	ASTM D5185(m)		**512**	524	591
Calcium	ppm	ASTM D5185(m)		**1730**	1651	1562
Phosphorus	ppm	ASTM D5185(m)		**739**	766	781
Zinc	ppm	ASTM D5185(m)		**883**	871	935
Sulfur	ppm	ASTM D5185(m)		**2116**	2247	2147
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	▲ **56**	9	10
Sodium	ppm	ASTM D5185(m)	>118	**8**	4	4
Potassium	ppm	ASTM D5185(m)	>20	**8**	1	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0.7**	0.5	0.4
Nitration	Abs/cm	ASTM D7624*	>20	**7.8**	6.9	6.2
Sulfation	Abs/.1mm	ASTM D7415*	>30	**23.5**	22.7	21.7

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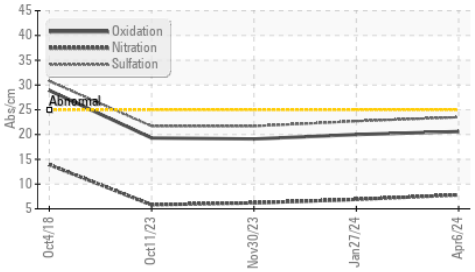
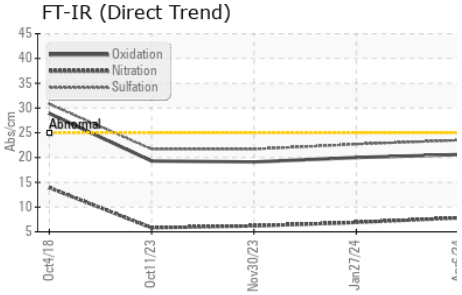
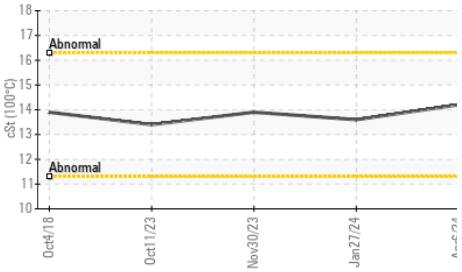
FT-IR (Direct Trend)



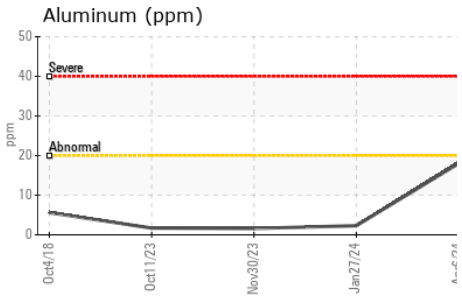
FT-IR (Direct Trend)



Viscosity @ 100°C



Aluminum (ppm)



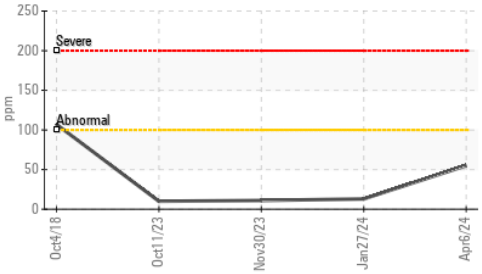
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**20.6**	20.0	19.1

VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

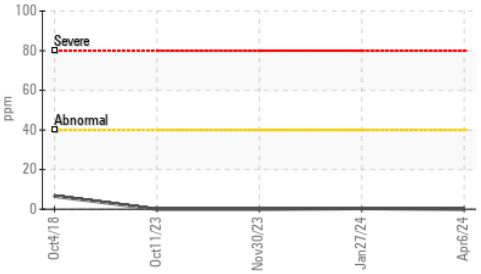
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)		**14.2**	13.6	13.9

GRAPHS

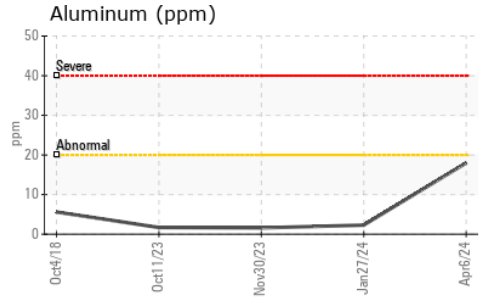
Iron (ppm)



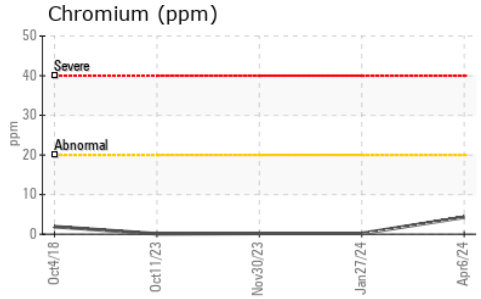
Lead (ppm)



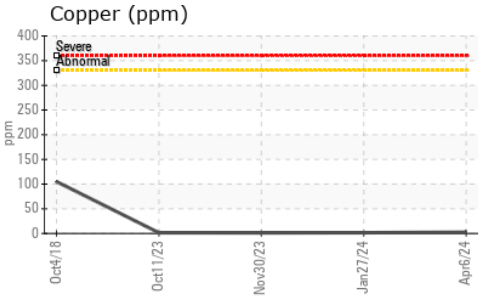
Aluminum (ppm)



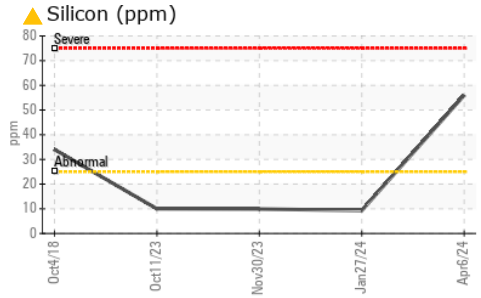
Chromium (ppm)



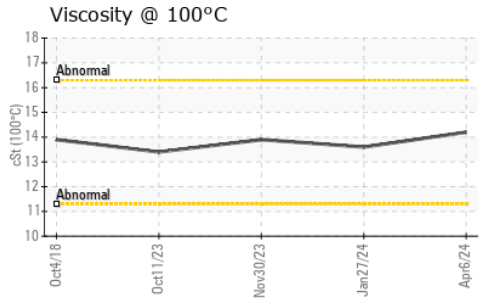
Copper (ppm)



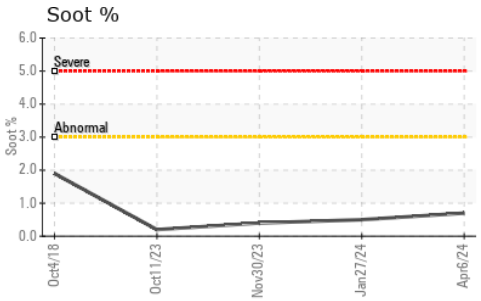
Silicon (ppm)



Viscosity @ 100°C



Soot %



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0928374
Lab Number : 02627797
Unique Number : 5760929
Test Package : MOB 1

Received : 10 Apr 2024
Tested : 10 Apr 2024
Diagnosed : 10 Apr 2024 - Kevin Marson

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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Report Id: KIR370KIR [WCAMIS] 02627797 (Generated: 04/10/2024 14:24:56) Rev: 1

Contact/Location: Jay Gould - KIR370KIR